UPDATE ON THE U.S. PUBLIC HEALTH RESPONSE TO THE EBOLA OUTBREAK

HEARING

BEFORE THE

SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS

OF THE

COMMITTEE ON ENERGY AND COMMERCE

HOUSE OF REPRESENTATIVES

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C O N T E N T S

UPDATE ON THE U.S. PUBLIC HEALTH RESPONSE TO THE EBOLA OUTBREAK

TUESDAY, NOVEMBER 18, 2014

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 1:38 p.m., in room 2123 of the Rayburn House Office Building, Hon. Tim Murphy (chairman of the subcommittee) presiding.

Members present: Representatives Murphy, Burgess, Blackburn, Scalise, Harper, Olson, Gardner, Griffith, Johnson, Long, Ellmers, Terry, Barton, DeGette, Braley, Lujan, Castor, Tonko, Yarmuth, Green, and Waxman (ex officio).

Staff present: Sean Bonyun, Communications Director; Leighton Brown, Press Assistant; Noelle Clemente, Press Secretary; Brenda Destro, Professional Staff Member, Health; Brad Grantz, Policy Coordinator, Oversight and Investigations; Brittany Havens, Legislative Clerk; Sean Hayes, Deputy Chief Counsel, Oversight and Investigations; Charles Ingebretson, Chief Counsel, Oversight and Investigations; Carly McWilliams, Professional Staff Member, Health; Emily Newman, Counsel, Oversight and Investigations; Alan Slobodin, Deputy Chief Counsel, Oversight and Investigations; Tom Wilbur, Digital Media Advisor; Peter Bodner, Democratic Counsel; Brian Cohen, Democratic Staff Director, Oversight and Investigations, and Senior Policy Advisor; Lisa Goldman, Democratic Counsel; Amy Hall, Democratic Senior Professional Staff Member; Elizabeth Letter, Democratic Professional Staff Member; and Nick Richter, Democratic Staff Assistant.

Mr. MURPHY. Good morning. Today we convene our hearing on the Update on the U.S. Public Health Response to the Ebola Outbreak, from the Subcommittee on Oversight and Investigations.

I will begin with a 5-minute opening statement.

OPENING STATEMENT OF HON. TIM MURPHY, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF PENNSYLVANIA

Yesterday, Dr. Frieden, you shared with me a well-known quotation worth repeating: "Life can only be understood backward, but it must be lived forward." Today, we will review the lessons learned so far from the Ebola epidemic in West Africa and the plan to move forward as the administration asks taxpayers for $6.2 billion in new spending to fight this deadly outbreak.

So I want to see a plan that is simple and direct. Number one, prevent Americans from contracting Ebola; two, treat those who contract Ebola effectively; and three, stop the spread of Ebola at its source in West Africa. On the side of Ebola, however, its goal is to spread, kill, mutate, and repeat. There is no cure or vaccine so we have to work together to break the chain.

The steps we must take begin with erecting a strong perimeter of defense. That is why I outlined 10 recommendations at our last hearing which included a ban on non-essential commercial travel; a 21-day quarantine or isolation for those who have had hands-on treatment of an Ebola patient; upgrades and training for personal protective equipment; designating specific Ebola-ready medical centers; accelerate development of promising vaccines, drugs, and diagnostic tests; additional aircraft and vehicles capable of transporting American medical and military personnel who may have contracted Ebola back here for treatment; additional contact tracing and testing resources for public health agencies; and information for Congress regarding any resources needed.

Some of these measures have been implemented, and others are still needing to occur.

Our role here is to all work together to help define the mission and ensure the policies put forth are straightforward and flexible to accommodate the ever-changing nature of this Ebola outbreak. Like Occam's Razor, the best solution is the simplest one with the fewest assumptions.

As we have seen, missteps are caused by ignorance and arrogance. They are corrected by knowledge, humility, and honesty. Let us consider some of the false assumptions the Federal Government's response has been based upon. Any hospital could treat an Ebola patient. A negative Ebola test result means a patient doesn't have Ebola, but just this week, a physician from Sierra Leone died after being flown to Nebraska for emergency treatment after initial tests showed a negative result for the virus. His colleagues are now in quarantine, causing even greater anxiety in a medical profession that has already lost more than 500 to Ebola. Hospitals and health care workers would have some proper guidance on personal protective equipment. Self-isolation and quarantine orders aren't necessary, it was said. CDC guidelines do not require a three week self-isolation period for healthcare professionals who have been treating Ebola patients in West Africa. It was said that these volunteers can return to work immediately. But the hospitals I talked to did not agree. I asked an ER doctor from my district about whether any of his colleagues volunteering in West Africa could come back to work immediately. He had a simple response, and quoting him, he said, "They should stay away."

The administration continues to oppose travel restrictions and quarantines, yet respected institutions have such policies to ensure public health is protected. The Department of Defense has a quarantine policy as well as many local hospitals and medical institutions throughout the U.S. It is impossible for the American people to understand why the Government would have one standard for the military and yet another standard for people who may have been in the same, or possibly more perilous circumstances.

Consider the cost of the administration's position. Senator Schumer has asked the Federal Government to reimburse New York $20 million for the costs associated with the 500 healthcare workers it took to prevent an outbreak in New York City because of the case of Dr. Craig Spencer. Now, the taxpayers have every right to ask: Wouldn't it have been more cost effective for the administration to instead require all returning healthcare workers to adhere to a 21-day isolation policy?

We all need honesty and humility today. The American public is fine with a doctor who says, "This is our plan based on what we know today, but as the facts change—as they most assuredly will—then we have to change our approaches." A patient and the public expect that.

Now, Anthony Fauci of the NIH has said we should not look at the what ifs. I categorically disagree. That is exactly what we need to do, what Congress needs to do, and everybody involved with this needs to do. What if the outbreak migrates to other countries? What if the outbreak extends to other continents? And if we get new information that says a change in policy is needed, tell us what you have learned and why a change is required.

As one example, we have set up screening protocols at five different airports to accept passengers from West Africa. Is this complex approach the easiest and safest way to deal with an Ebola threat? Are we hoping that we will be lucky enough to catch each potential carrier? Can we track the hundreds or perhaps thousands who might otherwise have been exposed if we have 5 U.S. arrival points, countless potential destinations, and numerous connections through Europe? With a disease that has no margin of error like Ebola, I would rather be good than lucky.

We need to consider whether there should be a simpler approach of one arrival point that would allow us to easily track those returning aid workers and Government professionals coming from West Africa. The administration must also review whether Government charter flights are needed to help get aid workers to West Africa since many commercial airlines have ceased traveling there, and they also have concerns about shipping supplies to Africa.

I would like to ask the administration's Ebola czar, Ron Klain, about this issue, but when we asked for him to appear before our subcommittee, we were told that he "wasn't ready." Another congressional committee made a similar request, and I understand they were told that the White House Ebola response coordinator had "no operational responsibility." But for very few press interviews, this individual seems to be missing-in-action. No wonder the American people have concerns with the administration's response planning. We want to clear that up today, and we have good panels to do that.

The public is given plans that keep changing from agencies that sometimes feel paralyzed, led by a czar who isn't ready against a disease that is killing more every day. Well, we stand ready to work with the administration to keep the American people safe from the Ebola outbreak. I welcome all the witnesses and look forward to learning more about the latest public health actions on Ebola, and more details about the emergency funding request.

[The prepared statement of Mr. Murphy follows:]

PREPARED STATEMENT OF HON. TIM MURPHY

Yesterday, Dr. Frieden you shared with me a well-known quotation—'Life can only be understoodbackward, but it must be lived forward.'

Today, we will review the lessons learned so far from the Ebola epidemic in West Africa and the plan moving forward as the administration asks taxpayers for $6.2 billion in new spending to fight the outbreak. I want to see a plan that is simple and direct:

1. Prevent Americans from contracting Ebola
2. Treat those who contract Ebola effectively
3. Stop the spread of Ebola at its source in West Africa.

On the side of the Ebola virus is to spread, kill, mutate, and repeat. There is no cure or vaccine so we must break the chain.

The steps we must take begin with erecting a strong perimeter of defense. That's why I outlined ten recommendations, which included:

- A ban on non-essential commercial travel;
- A 21-day quarantine or isolation for those who have treated an Ebola patient
- Upgrades and training for personal protective equipment
- Designating specific Ebola-ready medical centers
- Accelerate development of promising vaccines, drugs, and diagnostic tests;
- Additional airplanes and vehicles capable of transporting American medical and military personnel who may have contracted Ebola back here for treatment;
- Additional contact tracing and testing resources for public health agencies;
- Information for Congress regarding any resources needed.

Some of these measures have been implemented. Others still need to occur.

Our role here is to help define the mission and ensure the policies put forth are straightforward and flexible to accommodate the ever-changing nature of this Ebola outbreak. Like Occam's Razor, the best solution is the simplest one with the fewest assumptions.

As we've seen, missteps are caused by ignorance and arrogance. They are corrected by knowledge, humility, and honesty.

Consider some of the false assumptions the Federal Government's response has been based upon:

- Any hospital could treat an Ebola patient.
- A negative Ebola test result means a patient doesn't have Ebola. Just this week, a physician from Sierra Leone died after being flown to Nebraska for emergency treatment after an initial test showed a negative result for the virus. His colleagues are now in quarantine, causing even greater anxiety in a medical profession that has already lost more than 500 to Ebola.
- Hospitals and health care workers were had proper guidance on personal protective equipment.
- Self-isolation and quarantine orders aren't necessary. CDC guidelines do not require a three week self-isolation period for healthcare professionals who've been treating Ebola patients in West Africa. These volunteers can return to work immediately.

But the hospitals I talk to don't all agree. I asked an ER doctor from my district about whether any of his colleagues volunteering in West Africa could come back to work immediately. He had a simple response. They, quote "should stay away."

The administration continues to oppose travel restrictions and quarantines, yet respected institutions have such policies to ensure public health is protected.

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I categorically disagree. That is exactly what we need to do.

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If we get new information that says a change in policy is needed, tell us what you have learned and why a changed is required.

As one example, we have set up screening protocols at five different airports to accept passengers from West Africa. Is this complex approach the easiest and safest way to deal with an Ebola threat? Are we hoping that we will be lucky enough to catch each potential carrier? Can we track the hundreds of thousands who might otherwise be exposed if we have five US arrival points, countless potential destinations, and numerous connections through Europe?

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The public is given plans that keep changing from agencies that are paralyzed—led by a czar who isn't ready against a disease that is killing more every day.

We stand ready to work with the administration to keep the American people safe from the Ebola outbreak. I welcome all the witnesses and look forward to learning more about the latest public health actions on Ebola and more details about the emergency funding request.

Mr. MURPHY. I now turn toward Ms. Castor for 5 minutes for an opening statement.

OPENING STATEMENT OF HON. KATHY CASTOR, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF FLORIDA

Ms. CASTOR. Chairman Murphy, thank you very much for holding today's hearing, the second that we have had on the Ebola outbreak. And at our hearing last month, Americans were rightfully concerned about the news they were hearing. It was just weeks after Thomas Duncan arrived at Texas Presbyterian with Ebola, and just days after two nurses who had treated him had become infected. In response to these cases, the CDC updated their protocols for treatment of Ebola patients, and issued travel guidelines for those who had treated or been exposed to Ebola.

Our hearing back then was held just 3 weeks before the election, and it seemed that much of the discussion of quarantines and travel bans reflected political concerns, instead of the advice of public health experts. But today, when we look at where things stand with regard to domestic preparedness, we are in a much better place. No cases of Ebola have been transmitted to any member of the general public in the United States. With new procedures in place, and with the exception of Dr. Craig Spencer in New York, no individual has knowingly entered the U.S. while infected with Ebola. Airport screening and new CDC monitoring guidelines implemented by State and local public health departments are in place, and we have successfully treated 8 Ebola patients that have entered U.S. hospitals.

I want to give credit to these hospitals and healthcare professionals that have treated these patients. The professionals at Emory University, the NIH, the University of Nebraska Medical Center, Bellevue, and Texas Presbyterian. Their readiness has made a huge difference. And I want to welcome Dr. Gold from the University of Nebraska and thank him for sharing his expertise today.

Unfortunately, the news from West Africa is not as good. While case counts in Liberia have slowed, there continue to be rapid increases in the number of Ebola cases in Sierra Leone and Guinea, and officials are now concerned about the appearance of Ebola in Mali. And that, Mr. Chairman, is why we need to continue to focus on the U.S. response in West Africa. It is a credit to our country that we are leading the effort to end the epidemic in West Africa, and the early results from Liberia indicate that our efforts and the efforts of our partner countries can make a real difference, but there is still much work to do.

I want to acknowledge all of the medical professionals who are doing that work, and in particular, say a few words about Dr. Martin Salia. We learned yesterday that Dr. Salia, who had been flown to Nebraska for treatment after developing Ebola while working in Sierra Leone, died from the disease. We send our condolences to his family, and acknowledge his bravery and selflessness in helping fight this disease.

West Africa is balanced on the edge, and if our efforts and the efforts of the World Health Organization are not successful, millions of people in these countries facing a looming humanitarian crisis will continue to suffer. And I am glad that Mr. Isaacs from Samaritan's Purse is here to give the perspective of the international aid community on the West African outbreak.

Mr. Isaacs, your group and other groups like yours are doing difficult but critical work, and you deserve support. We are now in a much better position to addresses cases of Ebola that appear in the United States than we were a few months ago. And I appreciate Dr. Frieden, Dr. Lushniak, Dr. Lurie, Dr. Lakey for joining us today to share lessons learned, and tell us how we can continue to improve and move forward. And I am also looking forward to the perspective of our witnesses on the administration's supplemental Ebola budget request. It is critical that Congress support this appropriations request. It would support domestic preparedness, help fortify 50 Ebola treatment centers nationwide, it would support the development of treatments and vaccines for Ebola, and it would support USAID and the U.S. Military in their critical efforts to eliminate Ebola in West Africa.

Mr. Chairman, I suspect that in the year to come, we will have our share of discussions over the budget, but I know we all support the goals of the President's Ebola Outbreak Plan to combat it, and I hope we can move quickly to provide the requested appropriations.

Thank you, and I yield back.

Mr. MURPHY. The gentlelady yields back.

Now recognize the vice chair of the full committee, Mrs. Blackburn, for 5 minutes.

OPENING STATEMENT OF HON. MARSHA BLACKBURN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE

Mrs. BLACKBURN. Thank you, Mr. Chairman. I appreciate the hearing, and I want to say welcome to all of our witnesses. We appreciate your time.

I think we have to realize, with the nearly 15,000 cases and over 5,000 deaths, that this Ebola epidemic is the worst since the discovery of the virus in '76. And you need to look at what the precedent is there: 2,400 known cases of Ebola prior to this outbreak. So we know that this is something that is going to be difficult and take some time to deal with, and we appreciate your efforts on that part.

And there is a little bit of good news coming out of Liberia. There is also kind of a mixed bag of news that is coming out of the region, and it all leads us to look at the magnitude of the situation in front of us, as well as the human-to-human transmission of the virus which has drawn attention to the need to be better prepared to keep Americans safe, and that is our goal. You know, most Americans believe it is the job of ASPR and the job the CDC to keep Americans safe from infectious disease, and that all efforts need to be on the table when it comes to keeping Americans safe. Don't take anything off the table.

The chairman mentioned some of those suggestions that were made at the last hearing. Indeed, yesterday I was at Fort Campbell with some of my troops who are over there now trying to build the hospitals, and are training their medical personnel. And I think it is of concern to us that the administration has been opposed to travel bans and to quarantines; items that we think might work. Even the Institute of Medicine recently held a workshop where researchers raised a number of questions about the characteristics of the Ebola virus. They concluded, and I am quoting, "many of the current risk quarantine policies and public health mitigation measures could be better informed and more effective if the means and potential routes for transmission were more thoroughly characterized. Until we know more about the nature of the deadly virus, it seems prudent to keep all commonsense measures on the table."

And with that, I yield to Dr. Burgess.

OPENING STATEMENT OF HON. MICHAEL C. BURGESS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. BURGESS. I thank the gentlelady for yielding. I thank our witnesses for being here today. Dr. Lakey, good to see you again.

This epidemic will surely go down in history as one of the most serious public health—from a global perspective, one of the most serious public health crises of the last 100 years.

At our last hearing, we had a great deal to discuss, and certainly many of the brave pronouncements from the middle of September were found to be non-operational by the middle of October, and there were failures in dealing with this crisis. Certainly, communication was lacking. Systems and protocols broke down, and provisions that we all thought were readily at hand were never in place to begin with. I hope we know better than to let this happen again. This summer's emergency, to me, emphasized one thing, and that

is have a lot of humility when you are dealing with this virus because it is difficult to predict.

As a physician, one of my biggest concerns since July has been the safety and the protection of healthcare workers. I want to thank the CDC for always being responsive to my telephone calls over the last several months, and the various conference calls that we had over the summer were helpful. And I have to tell you something, until you have this damn thing in your backyard, it is just hard to estimate how it is going to affect daily life on so many levels. Sure, we had a hospital that was hurt by the crisis. We are probably lucky we didn't have more than one that was hurt. Trash collection, sewer treatment, school districts, every one down the line was affected by having this virus in our area.

So we do have to take great care and closely follow the epidemic in Western Africa. It is important that that be brought under control. I also have to tell you I am grateful for the services of the hospitals that have handled the known Ebola patients, but I am much more worried about that unknown patient who could walk through an emergency room door at 3 o'clock tomorrow morning, unknown to anyone, unannounced, and provide the same set of circumstances that we have already been through. I am not sure we have learned entirely the lessons.

Thank you, Mr. Chairman. I will yield back.

[The prepared statement of Mr. Burgess follows:]

PREPARED STATEMENT OF HON. MICHAEL C. BURGESS

This Ebola epidemic will surely go down in history as one of the most serious public health crises of the last several hundred years.

At our last hearing, we had a lot to discuss. Overall, we failed in our response to the Ebola crisis. Communication was lacking, systems of protocol broke down, and provisions were never in place to deal with this crisis to begin with. We know better than to let this happen again. This summer's emergency only emphasized that we must have humility when discussing Ebola.

As a physician, one of my biggest concerns over the last six months or so was the safety and protection of health workers. I could not—and still do not—understand why health workers on the front lines of the epidemic in Africa were so much better protected than the nurses and doctors who treated Ebola patients in the United States. It is not only vital to contain the Ebola virus wherever it may be, but we must also ensure we are doing all we can to protect those who are serving these very sick and contagious patients. Until it is in your back yard as it was in mine in Texas, it is hard to comprehend the depth of the issue at hand.

I commend Dr. Frieden, the CDC and the other members of the panel for making yourselves available to the Congress so we may discuss policies that better protect the American public from infectious diseases like Ebola. I thank all of our witnesses for being here today.

It is my hope that we continue to make progress in this fight. Today's hearing is another good start. We must examine the response plan, protocol, U.S. guidelines, travel restriction policies, budget for dealing with this crisis and protective gear and proper precautions for health workers. But finally, we must also take great care to closely follow the epidemic in West Africa, as it is only a matter of time before another patient walks through the doors of an unsuspecting U.S. hospital.

When—not if—that happens, we must be prepared.

I yield back.

Mr. MURPHY. Gentleman yields back.

I now recognize the ranking member of the full committee, Mr. Waxman, for 5 minutes.

OPENING STATEMENT OF HON. HENRY A. WAXMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. WAXMAN. Thank you, Mr. Chairman. I am pleased you are holding this hearing. This is a very important topic, and it is appropriate for Congress to learn about it because the American people want to know what is happening and want some answers. But I picked up a couple of comments from the other side about having humility, learning from what has happened, and hope we know better because of what we have learned. When we last had a hearing in October, there was a pronounced disconnect between what the public health experts were telling the committee, and the rhetoric of some of the committee members. Some members called for quarantines and travel bans that experts had determined would be harmful. Some claim that the administration's protocols for screening and tracking travelers wouldn't work. Some even insinuated that immigrants with Ebola would soon be crossing the southern border, or that Ebola had mutated and become transmissible by air. This is hysterical. Rhetoric certainly induces a great deal of fear.

But, Mr. Chairman, none of these things were true. After two cases were transmitted in Texas, the Centers for Disease Control acted quickly and decisively to acknowledge the gaps and revise protocols. It has learned from its experiences. It has now been 33 days since our last Ebola hearing, and since then, not one case of Ebola has been transmitted in the United States. Only one traveler since then, Dr. Craig Spencer, has unknowingly brought a case of Ebola into the country, and it appears that our healthcare system responded effectively. Dr. Spencer knew how to immediately report his symptoms, was quickly isolated, and safely transported to a hospital equipped to treat a patient with Ebola, and his close contacts were monitored.

The health experts told us that our public health measures could protect the public from Ebola, and it turns out, Mr. Chairman, they were right.

So it is good that we have a chance today to show some humility and acknowledge that the fears that were expressed openly at our last hearing were not justified. As I said in that first hearing, we should have a sense of urgency about the epidemic in Africa. There is a lot of work to be done to stop the ongoing humanitarian crisis there, and we should view the appearance of Ebola cases in the United States as a wakeup call about the need for us to invest in public health preparedness at the Federal, State, and local levels.

President Obama is trying to address these challenges, and we should support those efforts, because if we don't stop Ebola in Africa, it could travel to other places, it could spread, so we have to control the epidemic where it is happening.

On November 5, the President submitted a $6.2 billion emergency supplemental funding request to Congress to improve domestic and global health capacities in 3 critical areas; containment and treatment in West Africa; enhanced prevention, detection and response to Ebola entering the U.S.; and buttressing the U.S. public health system to respond rapidly and flexibly to all hazards in the

future. It is critical, Mr. Chairman, that Congress support this request.

There is ample precedent for an emergency public health supplemental appropriation of this magnitude. In November 2005, the Bush administration requested $7.1 billion in emergency supplemental funding to speed up the development of a vaccine, and fund State, local, and Federal preparedness. Ultimately, a bipartisan Congress provided President Bush with over $6 billion of this funding. In 2009, Congress provided the Obama administration with nearly $7 billion in emergency spending authority to combat H1N1 influenza virus. Congress did the right thing by making those investments. They saved lives, they enhanced our preparedness, and the Congress should do the right thing now.

Thank you, Mr. Chairman. Yield back the balance of my time.

Mr. MURPHY. The gentleman yields back.

I would now like to introduce the distinguished panel for today's hearing, for the first panel.

We are joined by Dr. Thomas Frieden, the Director of the Centers for Disease Control and Prevention; the Honorable Nicole Lurie, the Assistant Secretary for Preparedness and Response at the U.S. Department of Health and Human Services; Rear Admiral Boris Lushniak, the Acting United States Surgeon General, who also oversees the operations of the United States Public Health Service Commissioned Corps, comprised of approximately 6,000 uniformed health officers.

I will now swear in the witnesses.

You are aware that the committee is holding an investigative hearing, and when doing so, has had the practice of taking testimony under oath. Do you have any objections to testifying under oath? All the witnesses say they do not. The Chair then advises you that under the rules of the House and the rules of the committee, you are entitled to be advised by counsel. Do you desire to be advised by counsel during your testimony today? All the panelists waives that. In that case, if you will all please rise and raise your right hand, I will swear you in.

[Witnesses sworn.]

Mr. MURPHY. Thank you. All of the panelists have answered in the affirmative. So you are under oath and subject to the penalties set forth in Title XVIII, section 1001 of the United States Code. You may now each give a 5-minute summary of your written statement. We will start with you, Dr. Frieden.

STATEMENTS OF THOMAS R. FRIEDEN, DIRECTOR, CENTERS FOR DISEASE CONTROL AND PREVENTION; NICOLE LURIE, ASSISTANT SECRETARY FOR PREPAREDNESS AND RESPONSE, DEPARTMENT OF HEALTH AND HUMAN SERVICES; AND BORIS D. LUSHNIAK, ACTING SURGEON GENERAL OF THE UNITED STATES, DEPARTMENT OF HEALTH AND HUMAN SERVICES

STATEMENT OF THOMAS R. FRIEDEN

Mr. FRIEDEN. Thank you very much, Chairman Murphy, Congresswoman Castor, Full Committee Ranking Member Waxman, and the other members of the committee. We appreciate the oppor-

tunity to come before you today and discuss what has happened in the past month since the last hearing.

In the basics of Ebola, we continue to see the pattern that we have seen over the past 4 decades. In fact, in the more than 400 contacts that we have traced in the U.S., we have not seen spread outside of that one incident in Dallas in the healthcare setting, among more than 2,000 travelers who have been monitored since arriving from West Africa. We have seen a series with fevers but none with Ebola.

So nothing changes the experience that we have to date that Ebola spreads from someone who is sick, and it spreads through either unsafe caregiving in the home or healthcare facility, or in Africa, unsafe burial practices.

Emergency funding is absolutely critical to protect Americans. It is critical to stop the outbreak at the source in Africa, and to strengthen our protections here at home. Globally, in each of the three epicenter countries we have seen rapid change, and flexibility is absolutely key to the response. In Liberia, we have seen promising developments in recent weeks, with some decrease in numbers, but still the number of new cases each week is in the many hundreds, and our ability to stop it is very challenging because it is now present in at least 13 of the 15 counties of Liberia, and our staff are now responding to as many as one new cluster or outbreak per day, compared over the past 4 decades with one cluster or outbreak every year or 2. It is going to require a very intensive effort to trace each one of those chains of transmission and stop it so that we can end Ebola.

In Sierra Leone, we are still seeing areas with widespread transmission, although some of the areas that have implemented the strategies we recommend have seen significant decreases as well. Guinea, in some ways, is the most interesting or concerning or instructive to look at because it shows what might happen in the future if we have progress in the first 2 countries. There is a challenge to trace each outbreak, each case, to reach each community and end the chains of transmission. That is why the emergency funding request outlines a comprehensive approach that is simple, straightforward, and focused, and approaches things by prevention, detection, response, 3 main categories. In West Africa, that prevention involves quarantine and screening, involves infection control and hospitals and burials, it involves detection so that we find outbreaks promptly, and strengthen surveillance and strengthen the ability of healthcare facilities and public health workers there to stop chains of transmission, and response through core public health functions of contact tracing, training, infection control, public health education and outreach, and the use of rapid response teams.

Globally, we are also seeing new threats with the cluster of cases in Mali. CDC has surged. We have 12 staff on the ground today in Mali. We were there before their first case, and they are now tracing more than 400 contacts, and we are helping them to do that and to test any who may have symptoms that could be Ebola. We also are aware that with the end of the rainy season, other parts of West Africa may experience an increase in travelers from the affected countries, and may be at increased risk. The metaphor of a

forest fire holds here, with the center burning still strongly, with a series of brushfires around the region, and with sparks that have the potential of igniting new sources and new challenges in the struggle against Ebola.

Globally, the funding request also addresses the global health security aspect so that we can, with an emergency focus, stop the kind of vulnerabilities that keep other countries vulnerable and us vulnerable. Most of that, about 3¾4 of the CDC component of that request, is to strengthen the warning systems; detection, laboratory networks, and others. There are also funds to respond rapidly and to prevent wherever possible.

For the part of the funding request that covers the U.S., we have made progress. We are doing that through a series of levels, but each of those is going to require significant investments. Stopping it at the source in Africa, screening all travelers when they leave Africa, screening travelers when they arrive to the U.S., tracing each traveler for 21 days after they arrive here in all of the 50 States. The States have really stepped up and are doing an excellent job of that, with CDC support and guidance, with excellent participation from Customs and Border Protection, which is now providing electronically collected data in just a question of hours to the States. We are seeing most States reaching 100 percent of travelers regularly, according to the information that they are reporting to us. So this is a relatively new program, but it is going smoothly. It is, however, working on borrowed dollars, and we will need funding from the emergency funding request to support this and other key measures of prevention, detection and response within the U.S., public health systems, hospitals, laboratory networks, active monitoring, and more.

Finally, I would emphasize that intensive public health action can stop Ebola. In Nigeria, they were able to surge and stop a cluster from spreading. Mali is now in the balance of whether it becomes the next Nigeria, having successfully contained a cluster, or the next Liberia or Sierra Leone, with widespread transmission. This is a real warning that we must not let down our guard. The shifts and the changes in the epidemiology in Africa are just an emphasis of the need for a rapid and effective response, and emphasized that the only way to protect us in the U.S. is to stop it at the source, and to build the systems both in Africa and in the U.S. that will find, stop and prevent Ebola and other infectious disease threats.

Thank you very much.

[The prepared statement of Mr. Frieden follows:]

House Energy and Commerce Committee

Subcommittee on Oversight and Investigations

Update on the U.S. Public Health Response to the Ebola Outbreak

November 18, 2014

Statement of Dr. Thomas R. Frieden, M.D., M.P.H.

Director, Centers for Disease Control and Prevention

Good afternoon Chairman Murphy, Ranking Member DeGette, 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 protecting Americans. I am Dr. Tom Frieden, Director of the CDC. I appreciate the opportunity to be here today to discuss the epidemic of Ebola, as well as the work the CDC is doing to manage this epidemic and its consequences, both here in the United States and overseas. My testimony will provide you with an update on the epidemic, the important steps we are taking to protect Americans by actions here at home and by eliminating threats overseas, and describe the unfinished work that needs to be addressed through the Emergency Funding Request for Ebola.

Status of the Epidemic

We have diagnosed a total of four Ebola cases in the United States, two of which were in people returning from West Africa and two health care workers infected here. In addition to these four cases, our health care system has successfully treated five American patients with Ebola who were safely medically evacuated from West Africa. Unfortunately, earlier this week, a volunteer physician was

medically evacuated from Sierra Leone and died in the United States. Since August, we have evaluated and ruled out Ebola in scores of other cases in the United States.

The 21-day monitoring period has passed for all of the community contacts and health care workers who had been identified by public health workers as having had potential contact with the Ebola patients in Texas and Ohio. We continue to monitor numerous low- but not zero-risk hospital staff who treated Dr. Craig Spencer in New York City.

Although there are some promising signs in parts of Liberia, the epidemic continues to rage there and elsewhere in West Africa. Some of this progress could be attributable to the extensive work the United States Government and our partners have done to increase treatment and isolation, and safe burials. This week, with the assistance of the Commissioned Corps of the United States Public Health Service, we have opened a facility intended to treat any health care workers who become infected with Ebola. We hope this will facilitate additional health care workers volunteering to care for patients. We were encouraged that proven public health techniques allowed for the containment of the disease in Nigeria and Senegal. However, we do see a continued risk to other African countries, as evidenced by the introduction of Ebola into Mali. While there has been some progress in some parts of Liberia, there is a long way to go before this epidemic is contained and we are safe from the risk of it spreading.

Protecting Americans

From the time the situation in West Africa escalated from an outbreak to an epidemic, we have recognized that we will only have zero risk in the United States when we eliminate the threat in West Africa. We have instituted layers of protections for Americans, starting with rigorous screening of passengers leaving the affected countries. Here in the United States, we also have anticipated that a

traveler could arrive with the disease, and we prepared for this possibility by working closely with our state and local partners and with clinicians and health care facilities so that any imported case could be quickly contained. We have learned important lessons from the imported case in Dallas, which underscored the need to improve tracking of those exposed; adapt and strengthen our guidance; ensure rigorous adherence to protocols; improve readiness of American hospitals; and work closely across Federal, state, and local levels of government.

The first imported case of Ebola in the United States, diagnosed on September 30 in Dallas in a traveler from Liberia, required CDC and the Nation's public health system to rapidly respond with control measures. As far as we have seen in Africa and the United States, Ebola only spreads from people who are ill or who have died, or from their body fluids. The two primary means by which Ebola spreads are unsafe care (prior to and after health care facility admission) and unsafe burials. Cultural norms that contribute to the spread of the disease in Africa – such as burial customs – are not a factor in the United States. Ebola can be stopped with appropriate triage, rapid diagnosis, and meticulous infection-control practices in American hospitals. CDC applies the best science and lessons we are learning to inform our guidance and actions.

We have been constantly monitoring and improving our response in the United States, and will continue to do so. This begins with a layered approach to increasing safety. Before the traveler leaves for the United States, these precautions start with intensive airport exit screening in the affected nations, including temperature scanning for outbound passengers. CDC staff worked to implement this exit screening through on-site training and ongoing direction in the affected countries.

CDC and U.S. Customs and Border Protection (CBP) within the Department of Homeland Security (DHS) also have implemented a rigorous program of entry screening for travelers at risk of carrying Ebola arriving in the United States. On October 11, entry screening began for passengers arriving at JFK airport and at four additional airports on October 16. The four additional U.S. airports are Newark, Washington-Dulles, Chicago-O'Hare, and Atlanta-Hartsfield International. On October 21, 2014, DHS announced that all travelers coming to the United States by air from Ebola affected countries will be required to enter the United States at one of the five airports where enhanced screening measures are implemented. Also, CDC and DHS announced that, effective Monday, November 17, entry screening would begin for travelers from Mali due to the evolving nature of outbreaks there. Screening includes an assessment for risk exposure and early signs of infection, and triage of passengers with clinical symptoms. With this assessment, appropriate public health actions can be determined and implemented, including movement restrictions when warranted.

On October 27, CDC updated its interim guidance for monitoring people potentially exposed to Ebola and for evaluating their intended travel, including the application of movement restrictions when indicated, and, consistent with this guidance, partnered with all 50 states to begin a program of active monitoring for 21 days for any individual arriving from West Africa. This monitoring program begins at the airport – where CBP and CDC obtain detailed contact information and provide passengers with detailed information on monitoring along with thermometers, health information, a log for temperature and symptoms, contact information for state health departments, and a wallet card to refer to in case of illness. Travelers with fever (all of whom have tested negative for Ebola) have used this information to contact the 24/7 hotlines every state has established and have been transported safely, and cared for safely, while an Ebola diagnosis was being ruled out. State and local authorities are provided contact

information and a detailed risk assessment for passengers, allowing them to take steps to appropriately actively monitor those with potential Ebola risks.

CDC is committed to providing immediate support to the state and local health and public health officials. Within hours of confirming the cases of Ebola, CDC had a team of people on the ground in Dallas; in New York City, CDC had a team already on the ground assessing the hospital, and sent additional staff even before the patient's diagnosis was confirmed, in order to assist the capable teams from state health departments, local authorities, and hospital staff. We have worked side-by-side with state and local officials to do all we can to prevent transmission to others. CDC supported the state and local officials to monitor people who may have been exposed to Ebola in Texas, New York City, and Ohio. These individuals were tracked for 21 days for any signs of symptoms, and were quickly isolated if symptoms developed. And, as of November 7, all contacts in both Texas and Ohio are out of the 21 day period of monitoring for onset of illness.

We were deeply concerned to have learned of transmission of the Ebola virus from the first, or "index" patient in the United States, to two health care workers in Dallas. While we may never know exactly how these transmissions occurred, they demonstrated the need to strengthen the procedures for infection-control protocols which allowed for exposure to the virus. The care of Ebola can be done safely, but it requires meticulous and scrupulous attention to infection control, and even a single inadvertent slip can result in contamination. Based on experience in Dallas as well as at NIH and Emory University, we updated our guidance for the use of personal protective equipment in the assessment and treatment of Ebola in the United States. We recommended that facilities keep the number of workers who care for anyone with suspected Ebola to an absolute minimum. We recommended that the procedures that are undertaken to support the care of an infected individual be limited solely to essential

procedures. We are recommending there be a full time individual who is responsible only for the oversight, supervision, and monitoring of effective infection control while an Ebola patient is cared for. We will continue to evaluate and improve infection control and preparedness as we learn more in the United States and elsewhere.

We have taken additional steps to increase the preparedness of hospitals. CDC is leading teams of public health infection control experts to assess the readiness of hospitals. This endeavor prioritized geographic locations around the hospitals where increased screening was occurring at airports and continues in a strategic manner. By November 17, these teams had visited 41 hospitals in 12 states and the District of Columbia. Every hospital should have the ability to recognize the signs of a possible Ebola case and isolate that individual. Further, the Administration's emergency funding request includes resources for the Department of Health and Human Services to strengthen infection control to prevent spread of Ebola and other infectious diseases in the United States. CDC is also increasing training for health care providers, including web based seminars on donning and doffing of PPE, and in-person events, such as one held at the Jacob Javits Center in New York, which was broadcast live and attended in-person by more than five thousand people.

Additionally, CDC continues to build capacity in our states through the Laboratory Response Network (LRN). In addition to CDC's own world class laboratories, 31 LRN labs now have capacity to test for Ebola, increasing access to timely diagnosis – and surge capacity in case it is needed. CDC is also extensively consulted to support evaluation and, when indicated, test people who may have Ebola. With heightened alert, we are receiving hundreds of inquiries for help ruling out Ebola in travelers – a sign of how seriously airlines, border agents, public health departments, and health care system workers are taking this situation.

On November 5, the Administration proposed an emergency funding request, including $1.83 billion for CDC, to enhance our efforts to address the situation. This request includes $621 million designed to fortify domestic public health systems. This request allows us to fully implement the urgent strategies outlined above, and includes support for the following activities:

- Improve Ebola readiness within State and local public health departments and laboratories.
- Support state health departments to improve and accelerate infection-control implementation throughout U.S. hospitals.
- Procure personal protective equipment (PPE) for the Strategic National Stockpile.
- Increase support for monitoring of travelers at U.S. airports and in states and communities.

Eliminating Ebola in West Africa

CDC's top priority is to protect Americans from threats. In the case of Ebola, this means not only working here at home, but eliminating the risk to Americans by stopping this epidemic at its source in Africa.

The current epidemic in Guinea, Liberia, and Sierra Leone is the first time an outbreak has been recognized in West Africa, the first-ever Ebola epidemic, and the biggest and most complex Ebola challenge the world has ever faced. We have seen cases imported into Nigeria, Senegal, and Mali from the initially-affected areas and we have also seen in Nigeria and Senegal that proven practices such as contact tracing, monitoring, and isolation and care can prevent a small number of cases from growing into a larger outbreak. We are working intensively in Mali to apply these control measures.

The earliest recorded cases in the current epidemic were reported in March of this year in West Africa. Following an initial response that seemed to slow the early outbreak for a time, cases flared again due to weak health care and public health systems. As of earlier this week, the epidemic has reached 14,484 reported cases, including 5,524 documented deaths, though we believe these numbers are substantially below actual disease rates.

The health systems in the affected countries in West Africa were weak prior to the Ebola outbreak, and do not reach into rural areas effectively. Health care workers are often too few in number and not reliably present at facilities, and those facilities have limited capacity. Poor infection control in routine health care throughout West Africa, along with traditions such as public funerals and preparing bodies of the deceased for burial, make efforts to contain the illness more difficult. Furthermore, the porous land borders among these three countries and their neighbors in West Africa as well as remoteness of many villages have greatly complicated control efforts. The epidemic has further weakened these fragile health care systems – many of which are now essentially shuttered – and as a result local populations have lost access to treatment for other major health threats, such as malaria, diarrheal disease, and assistance with birth and delivery. The secondary effects of this outbreak also transcend the medical realm, as the economies of the affected countries have taken major blows that could impact their growth and development for years to come and greatly complicated the epidemic response. To stop an Ebola outbreak, we find active cases, respond appropriately, and prevent future cases. The use of diagnostics is important to identify new cases. Once active cases have been identified, we must support safe and effective 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 to disseminate messages about effective prevention and risk reduction. These messages include recommendations to report suspected cases, to

avoid close contact with sick people or the deceased, and to promote safe burial practices. In Africa, another message is to avoid unsafe handling of bush meat and contact with bats, since "spillover events," or transmission from animals to people, in Africa have been documented for other viruses similar to Ebola through these sources.

We are working to strengthen the global response, which requires close collaboration with the World Health Organization (WHO) and additional assistance from our international partners. At CDC, we activated our Emergency Operations Center to respond to the initial outbreak, and are surging our response. As of last week, CDC has over 177 staff in West Africa, and over 1,750 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 key strategies of response: effective incident management, isolation and treatment facilities, safe burial practices, infection control throughout the health care system, and communications.

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.

The Administration's proposed emergency funding request includes $603 million for CDC efforts to control the epidemic in the hardest hit countries in Africa by funding activities including: infection control, contact tracing and laboratory surveillance and training; emergency operation centers and

preparedness; and education and outreach, and to conduct clinical trials in affected countries to assess safety and efficacy of vaccine candidates.

Reinforcing Basic Global Health Protections

There is an urgent need to reinforce basic public health systems in countries, such as those in West Africa, where disease threats can quickly arise and ultimately threaten the health of Americans. The Emergency Funding Request will allow us to emergently address unanticipated, urgent threats to health and global stability. I believe that if basic lab networks that can rapidly diagnose Ebola and other threats, emergency operations centers that can swing into action at a moment's notice, networks of trained disease detectives who can find an emerging threat and stop it quickly, and surveillance systems had been in place in West Africa before the current outbreak, the epidemic could have been prevented. Building these capabilities at the places of highest risk is key to preventing this type of event elsewhere and to ensuring that countries are prepared to deal with the consequences of their own outbreaks before they are exported to 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.

The Administration's proposed emergency funding request includes $606 million for CDC to strengthen global health security, reducing risks to Americans by addressing unanticipated threats and enabling the world to detect them early, respond swiftly before they become epidemics, and prevent outbreaks wherever possible. These efforts will provide temporary assistance to establish global health security capacity in vulnerable countries to prevent, detect, and rapidly respond to outbreaks before they become

epidemics by standing up emergency operations centers; providing equipment and training needed to test patients and report data in real time; providing safe and secure laboratory capacity; and developing a trained workforce to track and end outbreaks before they become epidemics. These activities are necessary to combat the spread of Ebola and reduce the potential for future outbreaks of Ebola and other infectious diseases that could follow a similarly devastating, costly, and destabilizing trajectory.

Conclusion

Stopping Ebola will take time and meticulous work. There are no 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 CDC-trained Nigerian epidemiologists rapidly activated, identified contacts, and worked with more than 1,000 Nigerian health workers to track 899 contacts for 21 days, making 19,000 home visits. Even with these resources, one case was missed, which resulted in a new cluster of cases in Port Harcourt, Nigeria. The health care workers persevered, and Nigeria is now Ebola-free – from that importation event. Public health strategies can stop transmission of Ebola and halt the progression of an outbreak.

With a focused effort, and increased vigilance at home, we can stop this epidemic, protect Americans, and leave behind a 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 epidemic and I look forward to answering your questions.

Mr. MURPHY. Thank you.

Dr. Lurie, you are recognized for 5 minutes.

STATEMENT OF NICOLE LURIE

Ms. LURIE. All right, good afternoon, Chairman Murphy, Member Castor, and other members of the committee.

I am Dr. Nicole Lurie, the Assistant Secretary for Preparedness and Response, or ASPR, at HHS. I appreciate the opportunity to talk to you today about actions that ASPR has taken to enhance our national preparedness and strengthen our resilience to public health threats.

While it is essential that we continue to focus on controlling the Ebola outbreak in West Africa, we also have a critical responsibility to protect our country from this disease. Today I will highlight three areas in which ASPR's work is critical to our domestic response.

First, the Biomedical Advance Research and Development Authority, or BARDA. Building on its previous successes in medical countermeasure development, BARDA is speeding the development, testing, and manufacture of Ebola vaccines and treatments. Second, the Hospital Preparedness Program has, since the beginning of this outbreak, been preparing hospitals and first responders to recognize and treat patients with suspected Ebola. And, third, our Federal resources and responders, whether the National Disaster Medical System, the Medical Reserve Corps, other public health service, stand ready to support a comprehensive response should it be needed in the coming months.

BARDA, in coordination with other medical countermeasure partners, has a great track record in expanding the medical countermeasures pipeline, and building needed infrastructure to do so. In addition to developing and procuring 12 products since Project Bioshield's inception over a decade ago, BARDA's Centers for Innovation in Advanced Development and Manufacturing, and its Fill Finish Manufacturing Network, are being used to produce, formulate, and fill vaccines and treatments for Ebola.

Complementing our success and medical countermeasure development, ASPR has made great strides in U.S. healthcare system preparedness. HPP, or Hospital Preparedness Program, investments have fostered an increased level of preparedness throughout communities in this country, and decreased reliance on Federal aid following disasters. In the last several years, HPP awardees have demonstrated their ability to respond to and quickly recover from disasters, including tornadoes, floods, hurricanes, and fungal meningitis from contaminated steroids.

Through HPP, ASPR is actively engaged in Ebola preparedness by developing and disseminating information, guidance and checklists, and serving as a clearinghouse for lessons learned. Together with CDC, we have launched an aggressive outreach and education campaign that has now reached well over 360,000 people through webinars and and national calls, including with public health officials, hospital executives, frontline healthcare workers and others across the U.S. My office, along with the CDC, continues to recruit hospitals willing and able to provide definitive care to patients with Ebola in the United States. Concurrently, we are working with per-

sonal protective equipment manufacturers to coordinate supply and distribution, and are working with HPP-funded healthcare coalitions to collaboratively assess needs and share supplies across communities.

The likelihood of a significant Ebola outbreak in the United States is quite small, but ASPR, HHS and our interagency partners are, as you know, part of a coordinated, whole-of-Government response, a response that extends on the one hand to West Africa, and on the other, through State and local Governments and to hospitals and communities throughout the United States. As is typical for other emergencies and disasters, ASPR is responsible for public health and medical services, and coordinates Federal assistance to supplement State, local, territorial, and tribal resources, and response to public health and medical care needs during emergencies.

I would like to close with an overview of the recent emergency funding request from the administration that includes $2.43 billion for HHS.

ASPR's request supports two major components; BARDA's product development efforts, and HPP's preparedness initiatives. Specifically, funding will support development of an Ebola vaccine and therapeutic candidates, clinical trials, and commercial-scale manufacturing. Funding will ensure that communities will be able to purchase additional personal protective equipment, that healthcare workers will receive additional training, and patient detection, isolation and infection control, and that we further build our preparedness for the future by ensuring that all States have facilities that can handle an infectious disease as serious as Ebola.

Mr. Chairman and members of the committee, the top priority of my office is protecting the health of Americans. I can assure you that my team, the Department, and our partners have been working and continue to work to ensure our Nation is prepared to respond to threats like Ebola.

I thank you for this opportunity to address these issues, and welcome your questions.

[The prepared statement of Ms. Lurie follows:]

Written Testimony
House Committee on Energy and Commerce, Subcommittee on Oversight and Investigations

U.S. Public Health Response to the Ebola Outbreak

Statement of

Nicole Lurie, MD, MSPH
Assistant Secretary For Preparedness and Response

ASPR
ASSISTANT SECRETARY FOR PREPAREDNESS AND RESPONSE

For Release on Delivery
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Good afternoon Chairman Murphy, Ranking Member DeGette, and other distinguished Members of the Committee. I am Dr. Nicole Lurie and I serve as the Assistant Secretary for Preparedness and Response (ASPR) at the Department of Health and Human Services (HHS).

I appreciate the opportunity to talk to you today about the actions ASPR has taken to lead the country in preparing for, responding to, and recovering from the adverse health effects of emergencies and disasters by supporting our communities' ability to withstand adversity, strengthening our health and response systems, and enhancing national health security. ASPR works within HHS and with its Federal, state, tribal, and local partners to advance the public health preparedness of our Nation, by helping to build communities that are more resilient when faced with events that have an adverse effect on the public's health, whether they are naturally occurring disasters, infectious disease outbreaks, or acts of terrorism. ASPR has led the public health response and recovery from natural disasters, such as Hurricane Sandy, the devastating earthquake in Haiti, and the Deepwater Horizon oil spill. We have responded to disease outbreaks including the H1N1 pandemic influenza and the current Ebola outbreak. In addition, ASPR provides public health and medical response capabilities for National Special Security Events, including Presidential inaugurations, the State of the Union Address, and other national events requiring high security. Over the past six years, we have improved our preparedness network with new and stronger partnerships with state, tribal, and local governments, health care systems and workers, industry, international entities, and many more. Across our mission space, I have placed a priority on working in partnership with industry and the private sector; building resilient communities; addressing the needs of the at-risk community; and instilling an enterprise

approach among our Federal partners. Collectively, we are moving aggressively forward to prepare for any contingency, ranging from natural to manmade threats.

ASPR has been uniquely successful in advancing the nation's preparedness through its coordination and collaboration with a broad array of partners. These day-to-day activities, and the infrastructure we have put in place, are key to responding to Ebola. In my testimony, I would like to highlight three areas of ASPR's work: the Biomedical Advance Research and Development Authority (BARDA), the Hospital Preparedness Program (HPP), and our emergency operations function. I will also review how ASPR's authorities provided through the Pandemic and All-Hazards Preparedness Act of 2006 (PAHPA) and reauthorized by the Pandemic All-Hazards Preparedness Reauthorization Act of 2013 (PAHPRA) have been critical to our response efforts. BARDA, a core component of ASPR, is dedicated to building our domestic capability to develop effective medical countermeasures (MCM).

In 2010, HHS established a plan to modernize the medical countermeasure enterprise with the release of the Public Health Emergency Medical Countermeasure Review. Key to the success of this effort was the establishment of the Public Health Emergency Medical Countermeasures Enterprise (PHEMCE), which oversees the entire MCM lifecycle to ensure that Federal Departments and Agencies are working well together to ensure the coordination and decision-making at all stages of the MCM research and development pathway, from identification of requirements for particular types and quantities of drugs, through product development, and ultimately to distribution, stockpiling, and use. ASPR leads the PHEMCE, working in close partnership with other HHS agencies – including the National Institutes of Health (NIH), the

Centers for Disease Control and Prevention (CDC), and the Food and Drug Administration (FDA) – and our interagency partners, the Departments of Defense (DoD), Homeland Security (DHS), Veterans Affairs, and Agriculture. This well-functioning, day-to-day system, is serving us well to help develop MCMs for public health threats, including Ebola, and to ensure that our health care system is prepared, and to make decisions with the best available science. In fact, not long after the outbreak began last spring, I convened a meeting of the PHEMCE partners to review whether there might be candidate products in the pipeline whose development could be accelerated. This led us to prioritize the development and testing of both vaccine and therapeutics candidates for Ebola. ASPR uses modeling projections to enhance preparedness and response capabilities for a broad range of threats. Its support for and coordination of mathematical and computational modeling studies across the Government and academia help to assess the current and future progression of the Ebola outbreak and assist in response planning. CDC, NIH, DOD, DHS, National Laboratories, international health partners including the U.S. Agency for International Development (USAID) and the World Health Organization (WHO), and academic organizations are all working together to ensure that biosurveillance and other data sources are being used to coordinate response decisions and to base them on the best available data and science.

Recognizing that substantial resources are essential to advance the development of new and improved MCMs, the Congress has provided critical authorities and has appropriated billions of dollars for the development and procurement of MCMS for use against chemical, biological, radiological, and nuclear (CBRN) threats. These investments, and the collective efforts of BARDA, NIH, FDA, CDC, and our private industry partners, have resulted in products that

protect the American public, and will ensure that we have the MCMs to protect and ensure the national health security of the United States in emergencies. BARDA has procured 12 products since the inception of Project BioShield a decade ago and has built a national stockpile of pandemic influenza vaccines. The FDA has approved seven products supported by BARDA, including antitoxin treatments for botulinum toxin and anthrax, which have moved through all phases of the medical countermeasure pipeline, from discovery to procurement.

These investments have also strengthened our MCM enterprise to respond to CBRN threats in the future. We have gone from having very few products in the MCM pipeline to funding over 80 candidate products. If products in this group are successfully transitioned from development to procurement contracts, we anticipate having the following new MCMs available in the Strategic National Stockpile over the next five years: (1) an entirely new class of antibiotics; (2) anthrax vaccine and antitoxins; (3) smallpox vaccine and antivirals; (4) radiological and nuclear countermeasures, including candidates to address the hematopoietic, pulmonary, cutaneous, and gastrointestinal effects of acute radiation syndrome; (5) pandemic influenza MCMs; and (6) the first set of antidotes to chemical threats, as well as diagnostics to speed the identification of patients with conditions specific to this threat.

With each experience, HHS examines lessons learned and opportunities for improvement. Following the H1N1 epidemic, we identified the need for more flexibility to develop and produce innovative, safe and effective MCMs. In 2012, HHS established the Centers for Innovation in Advanced Development and Manufacturing (CIADM), public-private partnerships that provide a significant domestic infrastructure in the United States to produce MCMs to

protect Americans. Last year, as part of its pandemic preparedness efforts, BARDA established the Fill Finish Manufacturing Network, which is now being used to formulate and fill multiple Ebola antibody and vaccine candidates into vials for potential clinical efficacy studies in West Africa. Last year, in response to the H7N9 influenza outbreaks in China, ASPR mobilized these partnerships to design, develop, manufacture, clinically evaluate, and stockpile several vaccine candidates in record time.

HHS is using this infrastructure right now to develop MCMs against the Ebola virus. The CIADMs are positioned to expand the production of Ebola monoclonal antibodies into tobacco plants and mammalian cells. In addition, the Fill Finish Manufacturing Network will be used to formulate and fill Ebola antibody and vaccine products into vials for studies and other uses. With respect to vaccines, HHS is working to scale-up to commercial scale the manufacturing of promising investigational Ebola vaccine candidates using funds provided by the Congress in the FY 2015 Continuing Resolution.

Moving to issues of response to domestic emergencies, under the National Response Framework, my office is responsible for coordinating the Emergency Support Function #8 response – Public Health and Medical Services – and coordinating Federal assistance to supplement state, local, territorial and tribal resources in response to public health and medical care needs during emergencies. My office manages the National Disaster Medical System (NDMS), and other critical medical and public health resources that can be activated during catastrophic events when requested by states and localities. ASPR supports state, tribal, and local preparedness, response and recovery efforts through coordination of the Medical Reserve Corps (MRC), the Emergency

System for Advance Registration of Volunteer Health Professionals and the Hospital Preparedness Program (HPP). HPP defines the capabilities required for effective health care system response, and focuses on strengthening the day-to-day activities required to effectively respond to emergencies.

Since 2002, as a result of funding from HPP, we have made great strides in the ability of the predominantly private-sector health care system to provide medical care during an emergency surge of a large number of patients. In order to prepare the U.S. health care system to respond to events in a coordinated and collaborative manner, rather than facility-by-facility, ASPR provides resources to 62 state, territorial, and local awardees through the HPP. HPP investments have fostered an increased level of preparedness throughout communities and contributed to a decrease in state, tribal, and local governments' reliance on Federal aid following disasters. In the last several years, HPP awardees have transitioned from providing most of their HPP funding to individual hospitals within their jurisdictions to supporting coalitions of health care facilities. This transition to supporting and building regional health care coalitions has provided dramatic examples of a community's ability to recover after a disaster. For example, in the aftermath of tornados in Joplin, Missouri; Tuscaloosa, Alabama; and Moore, Oklahoma, HPP members immediately responded, administered care to the injured, and evacuated patients to other regional facilities that were part of the health care coalitions in those jurisdictions.

The cornerstone of this regional health system preparedness is the Health Care Coalition (HCC) – a formal collaborative network of hospitals, health care organizations, public health providers, emergency management, emergency medical services, and other public and private sector health

care partners within a defined region. By fostering preparedness and collaboration at the regional level to strengthen the overall health care system, HCCs allow for the sharing of resources, leveraging of expertise, and increased capacity to respond during an emergency. Through the efforts of HPP and its state, territorial, and local awardees, there are over 16,000 members in HPP supported coalitions throughout the Nation to include 4,778 hospitals. As a result, hospitals can now communicate with other responders through interoperable communication systems; track bed and resource availability using electronic systems; protect health care workers with proper equipment; train health care workers on how to handle medical crises and surges; develop fatality management, hospital evacuation, and alternate care plans; and coordinate regional training exercises.

To prepare for and respond domestically to Ebola, HPP is actively engaged in a number of activities, including: providing key information, guidance, helpful checklist documents and lessons learned to state, tribal, and local public health officials, hospital executives, health care workers, and others across the United States through webinars and national calls; actively recruiting (along with CDC) hospitals willing to provide definitive care to patients with Ebola in the United States; working with personal protective equipment (PPE) manufacturers to identify and coordinate supply distribution; and serving as the clearinghouse for Ebola-related tabletop exercises for hospitals and jurisdictions, as well as hospital infectious disease plans, so facilities and jurisdictions can quickly access them and adapt them for use in their own facilities. Recognizing that state, tribal, and local response needs to be nimble to support their health care systems, the ASPR office informed HPP awardees that funds may be used to prepare for suspected or known Ebola patients, including the development of action plans, purchase of

supplies for health care facilities, and training for all personnel. In emergency circumstances, HPP awardees may request approval to use grant funds for activities outside the originally approved scope of work. Some awardees have already initiated these requests for Ebola.

ASPR supports a coordinated medical response capability to assist states, tribes, and localities in responding to disasters. NDMS and MRC bring health care and other personnel together to support preparedness and response missions. The NDMS is a unique program which deploys federalized responders to support communities with medical, veterinary, and mass fatality assistance after a disaster or public health emergency. Most of the 5,000 NDMS employees are active locally in a civilian job, but support the Federal Government through service as intermittent employees on one of the many NDMS teams located across the Nation. By comparison, MRC is a volunteer program, with over 1,000 MRC units and 200,000 volunteers, and is primarily managed and organized at the local level to support public health and response missions through local health department initiatives. Both programs are poised to backfill staff caring for Ebola patients in the Nation's hospitals, in the unlikely event that such support would be needed.

ASPR is deploying medical response capabilities where they are needed most to keep America safe. HHS has developed focused teams of U.S. Public Health Service (USPHS) Commissioned Corps officers who have deployed and will continue to deploy to West Africa to provide care for health care providers who require Ebola treatment. ASPR is supporting this mission through the development of recommended safety guidelines and by providing operational, logistical, personnel accountability, and pre-deployment training of USPHS officers at DHS's Federal

Emergency Management Agency's Center for Domestic Preparedness in Anniston, Alabama. USPHS officers are trained on PPE, medical screening, and safety and clinical treatment recommendations. MRC is also supporting domestic readiness; some jurisdictions are using local MRC units to support call centers, assist health departments with epidemiology and surveillance activities, disseminate guidance and information to their community partners (*e.g.*, health care coalitions, emergency management, health care workers, etc.), conduct volunteer training and community educational activities, and provide partner level updates to enhance situational awareness. ASPR is leading the effort to ensure that deployed personnel have access to and receive training in the use of PPE. This training is critical to domestic preparedness and readiness. Training personnel on the use of current PPE is an absolute requirement to ensure the safety of personnel engaged in the medical care of Ebola patients. Any deployment activities for the purpose of patient screening or care will include the necessary PPE training that meets the CDC standard. Additionally, ASPR is working with other Federal Departments and Agencies to help coordinate the U.S. Government's response to the high demand for PPE nationwide. It is actively engaged with PPE manufacturers and distributors to assess the availability of products and to develop strategies to address supply chain challenges so that there are no shortages of PPE either domestically or abroad.

Recognizing the global impact of public health emergencies, HHS has strengthened international partnerships that make America safer at home. Whether it is an H1N1 pandemic, a natural disaster, or an Ebola outbreak, public health emergencies know no borders – the health of the American people is inseparable from the health of people around the world. Moreover, the same

global capacity that is needed to combat the spread of Ebola will reduce the deadly impact of future infectious disease outbreaks.

ASPR has forged trusted networks and relationships with key international partners and continues to receive and share information with the WHO and countries around the world about Ebola. In its coordination role for the medical portion of the U.S. response effort, HHS interacts regularly with physicians in developed countries who treat patients with Ebola to facilitate information-sharing and best practices. In addition, ASPR maintains regular communications and coordination with G7 countries, Mexico, and the European Commission on public health measures, development and deployment of MCMs, and support for African countries. These collaborations range from discussing countries' domestic preparedness activities and policies including board protocols, mutual notifications of imported cases, support for medical evacuation and coordination of activities to develop and manufacture medical countermeasures. The USAID Disaster Assistance Response Team incorporates specialists from DoD and HHS (including CDC) and draws upon the resources and innovation of many different departments, agencies, and ministries of health to support Ebola treatment units that help isolate and treat those affected by the disease.

In order to ensure that appropriate Federal resources are brought to bear in our international and domestic fight against Ebola, on November 5, the Administration proposed emergency funding totaling $6.18 billion, including $2.43 billion for the Department of Health and Human Services. I want to highlight how this request is central to some of our key response activities. First, $157 million of the emergency will be critical to supporting Ebola vaccine and therapeutic candidates, clinical trials, and commercial scale manufacturing. Funding through HPP will both

improve our ongoing Ebola preparedness, and also strengthen our nation's general preparedness by providing for at least one infectious disease containment center in every state, and supporting the PPE purchases, training, renovation, construction, and retrofitting facilities to create isolation units and separate laboratories. Because every hospital needs to be able to recognize and isolate a potential Ebola patient, additional money would be provided through health care coalitions to efficiently support the purchase of PPE and training for the broader network of hospitals, emergency medical services providers, and ambulatory care facilities that need to be ready to recognize, isolate, and care for a suspected Ebola patient until they can be transferred to a treatment facility.

PAHPA authorities have been critical in responding to Ebola, whether related to BARDA or HPP. In addition, flexibilities provided by PAHPRA to FDA's existing Emergency Use Authorization authority have helped to facilitate the issuance of critical Emergency Use Authorizations for multiple uncleared Ebola diagnostic tests that are in use now in the United States and West Africa. PAHPA also established the office of the ASPR, which is playing a vital role in this response. As part of the HHS leadership team responding to Ebola, I lead coordination activities supporting the HHS policy team including international engagement; establishing technical assistance for state, tribal, and local health departments and private-sector health care providers; the advanced development of vaccines and therapeutic MCM for Ebola, as well as testing and manufacturing; and preparation of Federal personnel for deployments to assist the U.S. response. I engage regularly and on an ongoing basis with the Secretary, other key HHS leadership, and Departments across the Federal Government, including the Ebola Response Coordinator, Mr. Ron Klain.

Together, we are mounting an aggressive whole-of-government response strategy to the Ebola crisis. We are focusing on controlling the epidemic; mitigating the secondary impact, including economic, social, and political tensions; coordinating the U.S. and broader global response; and reinforcing global health security infrastructure in the region and beyond.

These measures demonstrate our country's commitment to building the public health resilience needed to better prepare for disasters before they occur. Moreover, these investments require our continuing attention and commitment over the long-term and should not depend solely on the occurrence of a public health emergency. Building resilience makes us more secure from a range of public health emergencies – from an H1N1 pandemic, Ebola or other emerging infectious disease outbreak, to CBRN threats, and natural disasters.

Mr. Chairman and Members of the Committee, my team, our HHS colleagues, and our interagency partners have worked long hours to prepare our Nation for public health threats and ASPR is focusing all efforts on protecting America's health security. The best way to protect America from Ebola is to support the response to the epidemic in West Africa and to get infection and spread under control as quickly as possible. We are making efficient use of investments and leveraging the infrastructure and tools we have developed, and we are far better off than we were ten years ago following the anthrax attacks and the Hurricane Katrina response.

With that in mind, our continued success in containing the current Ebola outbreak and being prepared here at home depends on receiving the emergency resources recently requested by the President. These resources are vital for ASPR to continue supporting the advanced development

and manufacturing of promising therapeutics and vaccines. In addition, the request provides funding for health care coalitions around the Nation to purchase PPE and train staff on how to use it properly and safely and for states to establish Infectious Disease Treatment Facilities. I urge you to pass the President's request.

HHS stands ready to provide health and medical support to help our states and communities to respond and recover from public health emergencies. I thank you again for this opportunity to address these issues and welcome your questions.

Mr. MURPHY. Thank you.

Now, Dr. Lushniak, you are recognized for 5 minutes.

STATEMENT OF BORIS D. LUSHNIAK

Mr. LUSHNIAK. Great. Thank you so much for this opportunity, Chairman Murphy, Member Castor, members of the Oversight and Investigations Subcommittee, and thanks again for having us here to testify about the U.S. Public Health Service Commission Corps and its role in responding to the Ebola outbreak in West Africa.

I am here to provide information to you about what the Office of the Surgeon General, and specifically the United States Public Health Service Commission Corps, has contributed to this U.S. Government-wide effort to stop the spread of Ebola virus disease, in essence where it began, in West Africa.

The Commission Corps of the U.S. Public Health Service is made up of 6,700 uniformed officers. They are assigned to 26 different departments and agencies of the Federal Government, serving in 800 locations worldwide. I am very proud of this group of officers. They are highly trained, mobile, medical and public health professionals, operating under the departmental leadership of the Secretary of Health and Human Services, and the day-to-day oversight of the Surgeon General and the Assistant Secretary for Health.

The Commission Corps is one of the seven uniformed services of our Nation. The only uniformed service of its kind in the world. It is an unarmed, uniformed service dedicated to a public health mission, and to medical care for underserved and vulnerable populations. The mission of the Corps is to protect, promote, and advance the health and safety of the Nation.

For 125 years, this is an anniversary year for us, Corps officers have been the Government's dependable resource for health expertise and public health emergency services, working closely with the ASPR in times of war in the past, and other national or international emergencies. Corps officers, like officers in our other sister services, can be deployed at a moment's notice anywhere in the world to meet the needs of the President, the HHS, to address needs related to the well-being, security, and defense of the United States.

We have had a long history of doing this; protecting the health and safety of the Nation by addressing infectious disease overseas. Smallpox, as an example, polio, now Ebola. To ensure that we can meet the mandate to respond rapidly to urgent or emergency public healthcare needs around the globe, the Corps has established a tiered response system composed of 41 different general, as well as specialty response teams. We have deployed in the past to events ranging from terrorist events; 9/11, the Boston bombings, anthrax, natural disasters, hurricanes, Katrina, Rita, Wilma and Sandy, humanitarian assistance in Haiti, Indian Ocean tsunami, reconstruction stabilization in Iraq and Afghanistan, public health crisis, H1N1, suicide clusters on Indian reservations, to hospital infrastructure rescue in the Mariana Islands. Over the past 10 years, the Corps has undertaken over 15,000 officer deployments in support of nearly 500 distinct missions and events. Corps officers now are currently operating in both the United States and in West Africa in clinical, epidemiological, education, management, liaison

roles, supporting the Department of Health and Human Services, as well as working under the auspices of the Centers for Disease Control and Prevention. We have 900 officers stationed with the CDC.

One critical element of the Department's plan for combating the Ebola outbreak targets the ongoing need for healthcare personnel in the Ebola-affected countries. United Nations estimated that 1,000 international healthcare workers would be needed on the ground in West Africa to bring the outbreak to an end. There is a wide consensus that in order to create conditions that will encourage both West African and international healthcare workers to contribute, yes, their time and skill to contain and ultimately end the Ebola outbreak, it is essential to establish a dedicated facility to provide high-level care for those healthcare workers should they become infected with the virus. In support of this objective, the Corps has deployed trained clinicians, physicians, nurses, behavioral health specialists, infection control officers, pharmacists, laboratory workers, administrative management personnel, to Liberia to staff the Monrovian Medical Unit, the MMU. This is a U.S. Government-funded 25 bed hospital that has been configured to function as an Ebola treatment unit. It provides advanced Ebola treatment to Liberian and international healthcare workers, and to nongovernmental organizations and U.N. personnel involved in the Ebola response.

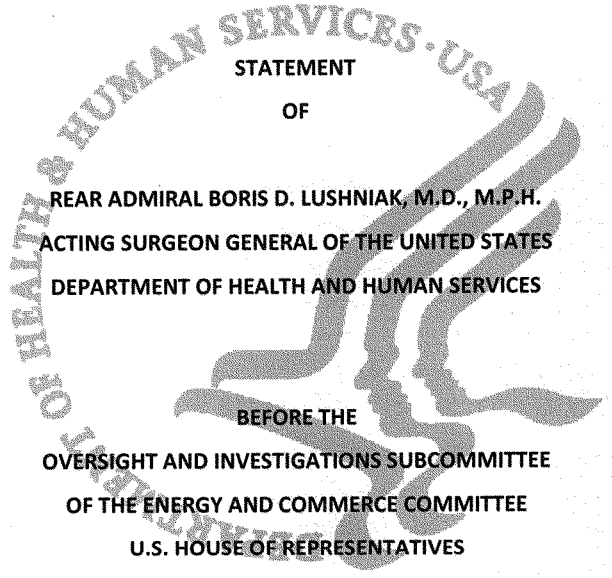
DoD, the State Department, USAID, have provided invaluable support for this mission. It is being carried out with the full cooperation of the Liberian Government and its Ministry of Health.

The first team of the United States Public Health Service Commission Corps officers completed one week of advanced training in Alabama in October. They arrived in Liberia on October 27. The full complement, a staffing of 70 Corps officers, each of whom voluntarily accepted this assignment to provide direct care for Ebola patients. Additional training was completed in Liberia with support of NGOs such as Medecins Sans Frontiers and the International Medical Corps. We have the equipment, we have gone through safety, clinical care, and management protocols. On November 12, the MMU accepted its first patient, a Liberian healthcare worker. Today, the fourth patient is soon to be admitted. Four overlapping teams of 70 officers will be scheduled for rotations of approximately 60-day deployments, for an estimated 6 months of operations at this MMU.

In conclusion, the safety of our personnel is our highest priority. We are making every effort to ensure that all Corps officers on the ground are working in an environment that will minimize any risk to their personal safety and security, following guidance from the CDC. To ensure the safety of our officers, their families, friends, coworkers, and the communities in which they live, work and play, upon return, officers will undergo exposure risk assessment and, as indicated, be monitored by public health authorities. We look forward to welcoming home our personnel returning from this mission, providing them support, and thanking them for their extraordinary efforts on behalf of the Nation and peoples of West Africa.

Thank you, Mr. Chairman, other members, and members of the subcommittee, and I will be happy to answer your questions at this time.

[The prepared statement of Mr. Lushniak follows:]



STATEMENT

OF

REAR ADMIRAL BORIS D. LUSHNIAK, M.D., M.P.H.

ACTING SURGEON GENERAL OF THE UNITED STATES

DEPARTMENT OF HEALTH AND HUMAN SERVICES

BEFORE THE

OVERSIGHT AND INVESTIGATIONS SUBCOMMITTEE

OF THE ENERGY AND COMMERCE COMMITTEE

U.S. HOUSE OF REPRESENTATIVES

November 18, 2014

STATEMENT OF
REAR ADMIRAL BORIS D. LUSHNIAK, M.D., M.P.H.
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November 18, 2014

Chairman Murphy, Ranking Member DeGette, and Members of the Oversight and Investigations Subcommittee, thank you for the opportunity to testify today about the U.S. Public Health Service Commissioned Corps and its role in responding to the Ebola outbreak in West Africa. My testimony will provide information about what the Office of the Assistant Secretary for Health, the Office of the Surgeon General and the United States Public Health Service (USPHS) Commissioned Corps (Corps) has contributed to the U.S. Government-wide effort to stop the spread of Ebola virus disease (EVD) where it began...in West Africa.

THE COMMISSIONED CORPS AND PUBLIC HEALTH EMERGENCY RESPONSE

The Commissioned Corps is made up of 6,700 uniformed officers who are highly-trained, networked and mobile medical and public health professionals operating under the departmental leadership of the Secretary of Health and Human Services and the day to day oversight of the Surgeon General and Assistant Secretary for Health. The Commissioned Corps of the Public Health Service is one of the seven uniformed services of the United States and the only uniformed service of its kind in the world.

The Corps exists to carry out programs to promote the health of the Nation, understand and prevent disease and injury, assure safe and effective drugs and medical devices, and deliver health services to Federal beneficiaries.

Since 1889, Commissioned Corps officers have been the Government's dependable resource for health expertise and public health emergency services in times of war and other national or international emergencies. Corps officers, like officers in the Army, Navy, and Air Force, can be deployed at a moment's notice anywhere in the world to meet the needs of the President and the Department of Health and Human Services.

Commissioned Officers are distinguished by their pledged commitment to leadership, service, integrity and excellence. For these officers of the Commissioned Corps appointed by the President, their work is not their job, it is their duty.

Title II of the Public Health Service Act establishes the composition and structure of the Commissioned Corps. The Act provides for both a "Regular" and "Ready Reserve" Corps and states that Corps officers be "trained, equipped and otherwise prepared to fulfill their public health and emergency response roles..." so that the Corps is ready to respond rapidly to urgent or emergency public health care needs and, when required, to address needs related to the well-being, security, and defense of the United States.

The Corps has a long history of protecting the health and safety of the Nation by addressing and eradicating infectious disease overseas —whether it be smallpox, polio, or now Ebola. Officers bring valuable skills and experience in providing culturally appropriate care in austere conditions, making the Corps a unique resource to combat Ebola. To ensure it can meet its mandate to respond rapidly to urgent or emergency public health care needs around the globe, the Commissioned Corps has established a tiered response system composed of 41 response teams and tiers of individual augmentees available to provide technical and clinical expertise to those teams. Every able active duty officer is assigned to one of these emergency response roles.

The Corps has deployed to events ranging from terrorist events (9/11, Boston Marathon Bombings, anthrax) to natural disasters (Hurricanes Katrina, Rita, Wilma, and Sandy; Red River flooding; Northeast ice storms); from humanitarian assistance (Haiti and Japan earthquakes, Indian Ocean tsunami) to reconstruction and stabilization (Iraq, Afghanistan); from public health crises (H1N1, suicide clusters on Indian Reservations) to hospital rescue (Mariana Islands). Over the past 10 years, the Corps has undertaken over 15,000 officer deployments in support of nearly 500 distinct missions and events.

THE COMMISSIONED CORPS AND EBOLA OUTBREAK RESPONSE

Officers from the USPHS Commissioned Corps are operating in both the US and West Africa in clinical, management and liaison roles supporting the Office of the Assistant Secretary for Health and the Centers for Disease Control and Prevention (CDC). In the U.S., Commissioned Corps officers assigned to CDC may serve on the CDC Ebola Response Team (CERT). The CERT is made up of public health experts that can be mobilized and deployed anywhere in the U.S. to provide assistance to health care facilities and state and local health departments with their

management and care of persons with EVD. CERT members are identified based on their expertise in specific technical areas and many individuals have previous experience with field deployments, field investigations, and infection control practices.

One critical element of the Department's plan for combatting the Ebola outbreak targets the ongoing need for health care personnel in the Ebola-affected countries. In September, the United Nations estimated that 1,000 international health care workers would be needed on the ground in West Africa to bring the outbreak to an end. There is a wide consensus that in order to create the conditions that will encourage both West African and international health care workers to contribute their time and skill to contain and ultimately end the Ebola outbreak, it is essential to establish a dedicated facility to provide high-level care for national and international health care workers should they become infected with the virus. In support of this objective, the Corps has deployed trained clinicians (physicians, nurses, behavioral health specialists), infection control officers, pharmacists, laboratory workers, and administrative management personnel to Liberia to staff the Monrovia Medical Unit (MMU).

The MMU is a U.S. Government-funded 25-bed field hospital located in Margibi County, Liberia, that has been configured to function as an Ebola Treatment Unit. It will provide advanced EVD treatment to national and international health care workers, and to non-governmental organizations and United Nations personnel involved in the Ebola response on a space available basis. The full complement of staffing for the MMU will include approximately 70 Corps officers during each deployment, each of whom voluntarily accepted this assignment to provide direct care to EVD patients in Liberia.

The Department of Defense (DOD) and the U.S. Agency for International Development support this mission, and DOD will provide support for the officers, including billeting, food, water, and other basic living support. DOD construction of an Expeditionary Medical Support (EMEDS) unit included adaptations for infection control, plumbing, septic systems, structures for the family visitation centers and behavioral health counseling, and security measures. These modifications to the EMEDS, necessary to create the functional MMU, were completed in early November. Full re-supply chains for the unique requirements of the MMU are also being finalized by DOD to assure that Corps officers have the equipment and supplies needed to provide a more comprehensive level of care than would otherwise be available to patients with EVD in Liberia.

Officers deployed to Liberia will have completed rigorous and intensive CDC-developed training in Anniston, Alabama prior to their deployment. Training includes didactic, situational, and hands-on advanced personal protective equipment (PPE) training to ensure our officers possess

sufficient knowledge of Ebola and its transmission routes to work safely and efficiently in the well-designed MMU. Once in-country, all officers receive "hot zone" training, which consists of shadowing health care workers experienced in the care of Ebola patients while those workers perform their duties in existing Ebola Treatment Units. Prior to working with Ebola patients, all officers involved in direct patient care will have demonstrated competency in performing all Ebola-related infection control practices and procedures, and specifically in proper donning/doffing of PPE. The safety of our personnel is our highest priority. We are making every effort to ensure that all Commissioned Corps officers on the ground are working in an environment that will minimize any risk to their personal safety and security.

CURRENT STATUS AND NEXT STEPS FOR MMU MISSION AND RETURNING OFFICERS

The first team of USPHS Commissioned Corps officers completed advanced training on October 25, 2014, and arrived in Liberia on October 27, 2014. Additional training was completed, necessary equipment was delivered, and safety, clinical care and management protocols were exercised in the ensuing days. On November 12, the MMU accepted its first patient.

Four overlapping teams of approximately 70 officers are scheduled for rotations of approximately 60-day deployments for an estimated six months of operations at the MMU. As of mid-November, the second team has been identified, rostered and is completing final pre-deployment preparations. Team 2 will transition with Team 1 over the course of a week, December 11-18, 2014.

While all possible efforts are being made to ensure that deployed Commissioned Corps officers providing direct medical care for persons with EVD are trained and provided the equipment and tools they need to ensure their safety, we know that unprotected exposure to the virus remains a possibility. Should an officer become ill with EVD, protocols currently in place serve to ensure that the officer is afforded the best care available. The Department of State has entered into a commercial medical evacuation contract that provides the capability to evacuate patients requiring bio containment per week based on suspected or confirmed EVD, if medically necessary. Deployed U.S. personnel contracting Ebola would be treated in the most effective manner possible, including medical evacuation to the U.S. if necessary.

To ensure the safety of our officers, their families, friends, co-workers and the communities in which they live and work, officers will be subject to exposure risk assessment. Officers will be returning into one of the five designated airports for enhanced screening just as all other individuals returning from patient-care-related activities in West Africa. As part of the

enhanced screening upon arrival, officers will be asked to disclose their associations to patient care activities within the affected regions to U.S. Customs and Border Protection. In addition, the Commissioned Corps will ensure that personnel returning from West Africa observe applicable guidelines regarding monitoring and movement restrictions. We look forward to welcoming home our personnel who are returning from West Africa, giving them the opportunity to rest and reconnect with family and friends, providing support, and thanking them for their extraordinary efforts on behalf of our Nation and the peoples of West Africa.

Thank you Mister Chairman, Ranking Member DeGette, and members of the Subcommittee. I will be happy to answer your questions at this time.

Mr. MURPHY. Thank you, Doctor.

I will now authorize myself 5 minutes for questions for our panel.

Dr. Frieden, in the weeks that you have been dealing with this in the United States, can you highlight perhaps the top 3 things, lessons learned and modified from this that could give the public assurances that you are adapting as need be?

Mr. FRIEDEN. The most important principle that we are following in Ebola control is to find out as quickly as possible, as definitively as possible, what works, and then to implement that, both on the ground in West Africa and in the U.S. What we have found is that treating Ebola in the U.S. is difficult. The two infections in Dallas were an indication of that, and we immediately moved to add a margin of safety to our guidelines for infection control and personal protective equipment. We also have put into place multiple levels of protection. Our top priority is protecting Americans, and we do that through control at the source in Africa, screening on exit, screening on entry, and the active monitoring program, as well as work with individual hospitals and health departments.

We have something called rapid Ebola preparedness teams that have now visited more than 30 hospitals in more than 10 States to get those hospitals ready for the next Ebola case, if one occurs, and actually, a team had been to Bellevue before Dr. Spencer even became ill.

Mr. MURPHY. OK.

Mr. FRIEDEN. So that rapid response is key and rapid adjustment as we learn more about Ebola and Ebola in the U.S.

Mr. MURPHY. OK, I want to get back on the hospitals issue in a minute here.

Dr. Lurie, in August of 2014, under Section 564(b) of the Food and Drug Cosmetic Act, Secretary Burwell declared that circumstances exist justifying the authorization of emergency use of in vitro diagnostics for detection of the Ebola virus. Did you help advise Secretary Burwell of that declaration, do you recall?

Ms. LURIE. Yes.

Mr. MURPHY. OK. So even though she declared Ebola to be an emergency for purposes of the FDA law, she has not declared Ebola to be a public health emergency under this, and she has not made this declaration even though the World Health Organization, in August, declared Ebola to be a public health emergency.

Do you agree or disagree, is this a public health emergency in the United States?

Ms. LURIE. So in order for an investigational diagnostic test or drug to be used in the United States, the Secretary has the authority to declare that the conditions of a potential public health emergency exist. As I think Dr. Frieden and others have highlighted, fortunately, we have been very successful in the United States in detecting and controlling this disease. We have had two very unfortunate cases of transmission of this disease in the United States, but not others, and we believe that all of our efforts are quite effective in controlling the disease at this time.

Mr. MURPHY. We hope so, but "fortunately" is also an operative word there, and we want to make sure we are doing everything that we possibly can.

On page 6 of your testimony, you mentioned you are responsible for coordinating the Emergency Support Function Number 8 response using domestic or—emergencies. Is that an operational responsibility that you have?

Ms. LURIE. So my responsibilities are both policy and advice, and we have operational response under ESF 8, yes.

Mr. MURPHY. And that has been activated under the response to Ebola?

Ms. LURIE. Yes, the Secretary's operations center is activated, and all components of ASPR are hard at work.

Mr. MURPHY. I am just trying to clarify, so you are still the coordinator for emergency support function, or is that now Mr. Klain?

Ms. LURIE. Mr. Klain is the Ebola coordinator for the country, yes.

Mr. MURPHY. OK. So let me look at this. What data are you modeling, or have you done a data modeling, to determine the number of cases we may anticipate in the United States? Have you done any of that data modeling?

Ms. LURIE. So one of the things that we have done, actually, as a lesson learned from H1N1, is brought together modelers from all across the Federal Government.

Mr. MURPHY. And how many cases are you planning for in the United States?

Ms. LURIE. So I think our models suggest that if we continue to be very aggressive about our exit screening from West Africa, our entry screening, tracking travelers for 21 days with active and direct active monitoring, as we are doing, that we might expect a handful of cases in the United States, potentially in an unrecognized cluster, but that we don't anticipate that we are looking at a widespread outbreak.

Mr. MURPHY. So you are asking for $6.2 billion here, but you are saying you are expecting a handful of cases. And Senator Schumer just said, look, you owe New York City $20 million because we had to track all these people that came in contact with someone, but you don't believe in a policy of some kind of self-isolation, even though many of these NGOs do believe in self-isolation. So there is a disconnect here: Expect a handful of cases, don't expect more, but asking for 50 hospitals to be prepared throughout the United States, but—help me understand where this——

Ms. LURIE. Sure.

Mr. MURPHY [continuing]. $6.2 billion——

Ms. LURIE. I would be happy to. I don't think that there is really a disconnect at all. Our strategy for hospital preparedness looks first at being sure that beyond the bio-containment facilities at Emory and Nebraska and NIH we have good strong hospital capacity to recognize, and treat through the entire course of illness, an Ebola patient, first in the 5 cities where all passengers are being funneled. A next ring of hospitals is needed for geographic dispersion around the country to places where travelers are most likely to go, and that is a pretty good range of States now throughout the country.

One of the things that we have learned, and you had asked Dr. Frieden about lessons learned, is that Mother Nature always has the upper hand. That means that we have to think about what is

next after Ebola. Ebola has taught us that we really need high-containment facilities. So far our planning has been for pandemic preparedness on something that is airborne like pandemic flu. The containment needs, the infection control needs for something like Ebola are very, very different.

So part of this emergency request is being able to meet our needs now by having a broad geographically dispersed network of hospitals able to treat Ebola, but it is also building toward the future because we don't know where the next cases are going to show up, or the next kinds of travelers are going to show up, but we need to be prepared not only for today but for the next decade and for the next century.

Mr. MURPHY. I am way over my time.

I recognize Ms. Castor for 5 minutes.

Ms. CASTOR. Thank you very much.

On November 5, the President requested $6.2 billion from Congress to enhance the U.S. Ebola response. The President's request focuses on stopping the outbreak at its source in West Africa.

Dr. Frieden, in your testimony you said you were focused in West Africa on prevention, detection, and response. Can you go into greater detail. The President's request designates $603 million to CDC for international response efforts. Discuss how these funds would specifically be used.

Mr. FRIEDEN. Thank you very much. Our approach would be on the prevention side to implement and strengthen quarantine and screening procedures so that those can be continued long-term, and individuals with Ebola or potentially exposed to Ebola would be isolated, traced, and then promptly isolated if they become ill.

Second on the prevention side is infection control. This is an enormous challenge for West Africa because each of the facilities caring for patients needs to think of the possibility of Ebola in countries where malaria is endemic, and where the symptoms of malaria and Ebola are not easily distinguishable. So that prevention is infection control and quarantine.

On the detection side, laboratory and related services to find infections and find illnesses as soon as they occur. That relates to some of the U.S. funding which would allow us to work with companies and other parts of the U.S. Government to optimize some of the testing modalities. And then surveillance, so we are tracking what is going on with the detection. And training of healthcare facilities to identify cases so they are found, isolated, cared for, and don't cause outbreaks. And then response; the core public health activities of contact tracing, training of healthcare workers, surveillance, public health education, outreach, rapid response teams, and support diminished periods of help so that we don't need to be there long-term. So we are training people to do the kind of prevention, detection, response that we are doing now.

Ms. CASTOR. And what, if any, public health infrastructure was in place in West Africa beforehand?

Mr. FRIEDEN. There were very weak systems in place prior to this, public health or healthcare, really a shortage of trained workers, so part of our effort is to build up those systems so that they can continue that for many years to come.

Ms. CASTOR. OK, and the budget request also would direct $1.98 billion to USAID, $112 million to the Department of Defense, and $127 million to the Department of State. Can you go through how funding to those agencies would assist in the broader effort?

Mr. FRIEDEN. I would have to refer you to them for the details, but in general, USAID is coordinating under the DART, or Disaster Assistance Response Team, process, and they are enlisting many partners within countries, for example, for burial teams which now exist all over Liberia, and are rapidly and safely and respectfully collecting human remains of people who may have died from Ebola.

We are also addressing some of the critically important areas of supporting development in areas like the Guinea forest region where there is a lot of resistance and some resentment, and services in that region are going to be very important in allowing us to get in and do Ebola control.

Ms. CASTOR. OK. Dr. Lushniak, how would the supplemental funding assist the public health service in their work in West Africa?

Mr. LUSHNIAK. I think to the large extent, certainly running the Monrovia Medical Unit, it is supported by multiple agencies. Within the Department of Health and Human Services, certainly, the supplement will assist us in that endeavor. DoD plays a key partnership role. They are really supplying us with equipment, supplies, a lot of the logistical support on the ground. USAID, as mentioned by Dr. Frieden, is really out there also pushing ahead. And so, you know, from our perspective is that to have a continuous presence on the ground, and if we strongly believe that this mission is important, as I do, which is providing that medical care to healthcare workers, that the supplemental will assure a success in that mission.

Ms. CASTOR. Now, we have heard from Doctors Without Borders and other international organizations about the need for flexibility and adaptability in our response and in that budget request. Dr. Frieden, what measures are built into the supplemental budget request that would give us that flexibility and adaptability?

Mr. FRIEDEN. Well, first, there is the contingency fund of $1.5 billion requested by the President, split essentially equally between the State Department/USAID and HHS, including CDC. That would be available, for example, if the disease breaks out in another part of Africa that we need to intensively surge to, or if we do have an effective vaccine, to implement a vaccine campaign will be quite challenging.

Second, within the budget request there is transfer authority, and that is extremely important so that we can adapt our response to what is needed. And third, within the CDC budget in particular, it would be a single budget line, so we would have flexibility within CDC to spend the resources specifically for Ebola control, as they will be most efficient and most effective.

Ms. CASTOR. Thank you very much. I yield back.

Mr. MURPHY. Gentlelady yields back.

I now recognize Mrs. Blackburn for 5 minutes.

Mrs. BLACKBURN. Thank you, Mr. Chairman.

Dr. Frieden, let me come to you. As I mentioned in my opening, keeping Americans safe, this is where our focus ought to be. And

you said in your testimony $621 million would be used to fortify domestic public health strategies, and you didn't mention the managing of waste products from patients with Ebola. And according to the Institutes of Medicine report from earlier this month, a patient with Ebola generates 30 to 40 times more medical waste than another patient. The report also states there is limited ability to handle Ebola medical waste in the U.S.

So I have a couple of questions. I can take a yes-or-no answer on these and be very happy with that. It will help us move quickly.

Will part of this funding, this $621 million, be directed to managing the medical waste products from treating Ebola patients, or will hospitals be expected to building on-site incinerators or autoclaves to decontaminate the waste?

Mr. FRIEDEN. Yes, funding will go to support hospitals to strengthen their waste management systems.

Ms. BLACKBURN. OK, and then do you have any plans to require sterilization of category A waste, including Ebola waste, on-site or as close as the source—to the source as possible?

Mr. FRIEDEN. CDC already provides guidelines for the management of waste potentially contaminated with the Ebola virus, and we would continue to recommend those same guidelines.

Ms. BLACKBURN. Does this include on-site?

Mr. FRIEDEN. Decontamination can be done either on-site or can safely be moved off-site——

Ms. BLACKBURN. Where is it going to go?

Mr. FRIEDEN. Where we are supporting hospitals to deal with Ebola, we would want that done on-site.

Ms. BLACKBURN. All right. Kind of got a little skirting the question there. Do you plan to procure and utilize mobile medical waste sterilizers?

Mr. FRIEDEN. That would be one option that could be considered.

Ms. BLACKBURN. Do you plan to do it?

Mr. FRIEDEN. It would depend on whether it made sense for the facility itself.

Ms. BLACKBURN. OK. What about the waste in Africa where we are supporting efforts?

Mr. FRIEDEN. In Africa, incineration is the method used for waste disposal in general.

Ms. BLACKBURN. OK. On-site?

Mr. FRIEDEN. Generally on-site, yes.

Ms. BLACKBURN. On-site, OK.

Dr. Lurie, I would like to come to you for a moment, if I may please. The funding request includes $157 million for BARDA to support the manufacture of vaccines and synthetic therapeutics for use in clinical trials. Would this funding be slated to support manufacturing at one of the 3 Centers for Innovation in Advanced Development and Manufacturing that were established through previous funding for BARDA, or are you looking at other potential manufacturing partners?

Ms. LURIE. Right now, funding is being used, and it would be anticipated to use to support both vaccine development, vaccine manufacturing, and fill and finish vaccine capacity. Also the continued capacity, and fill and finish of therapeutic products such as ZMapp. We are actively engaged both with the Centers for Innovation in

Advance Development and Manufacturing, and with the Fill/Finish Network components to look at the role that they can play.

Mrs. BLACKBURN. So you are engaging other partners.

Ms. LURIE. We are engaging a range of partners——

Mrs. BLACKBURN. Private sector.

Ms. LURIE. Yes.

Mrs. BLACKBURN. OK.

Ms. LURIE. We are engaging the range of partners that it is going to take to get us vaccine and therapeutics.

Mrs. BLACKBURN. OK. Well, we had read Secretary Burwell's testimony last week, as I am sure you have, from the Senate Approps. Committee, and it seems as if the funding for BARDA would go to manufacturing quantities of those products that undergo successful early development at NIH, and we know there are several private companies who have committed significant resources to development treatments or vaccines for Ebola, and we want to make certain that those companies are involved in processes going forward.

So it is my understanding you are saying you plan to include them and invite them.

Ms. LURIE. So any company with a promising product is always welcomed into BARDA, and we have a system to sit and talk with them, determine whether they have promising candidates, and for them to submit proposals that get evaluated. What I can tell you in this sense is that it is generally NIH's role to support the early development of products. It is BARDA's role to support the advanced development of products, and BARDA is, and will continue to support the advanced development of both vaccines and therapeutics, and to get them scaled up so that if they work, they can be used in a mass vaccination campaign, or in therapies.

Mrs. BLACKBURN. Thank you. I yield back.

Mr. MURPHY. Gentlelady yields back.

I now recognize Mr. Waxman for 5 minutes.

Mr. WAXMAN. Thank you, Mr. Chairman.

Dr. Frieden, you and a number of other experts have said numerous times, and you said it here today, the key to protecting Americans from Ebola is stopping the disease at its source in West Africa.

Can you explain the approach being taken in West Africa to contain the spread of this disease?

Mr. FRIEDEN. In brief, to identify patients who have Ebola promptly, get them isolated and cared for safely, and in the event that individuals die, have them buried respectfully and safely without spreading disease. To turn off those 2 main drivers of the infection; unsafe care and unsafe burial. That is what we have done to date in every outbreak until now, but the size, scale and speed required now remains daunting. Instead of dozens or a handful of cases, still hundreds or thousands of cases to deal with.

Mr. WAXMAN. So would you say the approach is working but the epidemic is moving too quickly to keep up with the amount of cases?

Mr. FRIEDEN. I think the decrease in cases in some areas within West Africa is proof of principle that the approach works, but we are still very far from the finish line.

Mr. WAXMAN. Um-hum. Well, what are the consequences of failure in Africa?

Mr. FRIEDEN. If we are not able to stop the Ebola epidemic in West Africa, the risks are very high that it would spread to other parts of Africa because of travel within Africa. If that were to occur, then it could be a matter of many years before we would be able to control it, and the threat to the U.S. and other countries would be proportionately greater.

Mr. WAXMAN. Well, some people say if that is the concern, why don't we just seal off Africa, not let people travel here from Africa. Would that solve the problem?

Mr. FRIEDEN. From the standpoint of public health, we look at first and foremost protecting Americans from risk, protecting Americans from threats, and currently we have systems in place that trace each person who leaves one of the three affected countries, each person who arrives to the U.S., and follows them for 21 days. We have already had people develop fever who have called up the Health Department with the 24/7 number that we provided to them, and have been safely transported and safely cared for, and have ruled out for Ebola, but those systems rely on knowing where people are coming from and how they are getting here.

Mr. WAXMAN. The President has asked for more money in a supplemental budget. A big portion of that is going to go to our efforts in Africa to try to stop and contain this disease, but some of that money is going to be used right here in the United States to enhance U.S. Government response to the Ebola outbreak. The request includes $621 million for CDC for domestic Ebola response. Can you give a brief summary of what programs and initiatives are covered by this funding?

Mr. FRIEDEN. Thank you. These would allow us to work with States so that all travelers are traced on a daily basis, and if they become ill, are promptly and safely taken to a facility that is ready to care for them. They would result in safer hospitals, not just from Ebola but also other infectious disease threats. There is a small research component that would allow us to implement a vaccine trial, probably in Sierra Leone, in the coming months to determine whether vaccination works. Other research would help us with rapid diagnostics so that we could detect more rapidly if someone became ill. We also would support all jurisdictions to be better prepared for Ebola and other infectious disease threats, have safer hospitals, more rapid response, and work very closely between the State and the hospital systems within the State on infection control generally, Ebola and other deadly threats, specifically, working very closely with the funding for ASPR and other parts of hospital preparedness.

Mr. WAXMAN. Well, it seems to me that it shouldn't be partisan in any way for us to give the grant of money the President has requested to deal with this terrible epidemic in Africa, and to protect Americans as well, and the request is quite balanced in helping us deal with the situation as we now have it. And past times, we have always had bipartisan support. But talking about here in the United States, what if we had a pandemic flu, that would certainly be a lot more dangerous because of how fast it could spread. Would these funds help us to deal with that? And secondly, are we pre-

pared for a pandemic flu? Do we have a stockpile of the medications, and are we ready—as you said, we don't know what will come next, but if that happened, are we ready for it?

Mr. FRIEDEN. We always work to be better prepared today than we were yesterday, and better prepared tomorrow than we are today. A pandemic of influenza remains one of the most concerning possibilities in all of infectious disease threats. The funding in the emergency funding request would assist this country, health departments, hospitals, the healthcare system, the public, to be better prepared for Ebola and other infectious disease threats, such as pandemic influenza, yes.

Mr. WAXMAN. OK, thank you. Thank you, Mr. Chairman.

Mr. MURPHY. I now recognize Dr. Burgess for 5 minutes.

Mr. BURGESS. Thank you, Mr. Chairman.

Before I start my questioning, I would like to submit for the record this document from the American Hospital Association for the record for today's hearing.

Mr. MURPHY. Without objection.

[The information follows:]

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Statement

of the

American Hospital Association

before the

United States House Energy and Commerce Committee

Subcommittee on Oversight and Investigations

"Update on the U.S. Public Health Response to the Ebola Outbreak"

November 18, 2014

On behalf of our nearly 5,000 member hospitals, health systems and other health care organizations, and our more than 40,000 individual members, the American Hospital Association (AHA) appreciates the opportunity to submit this statement for the record as part of the hearing on the government's response to fighting Ebola.

America's hospitals are dedicated to the health and safety of every patient and health care worker and have joined together with physicians and nurses to work to protect patients and caregivers. We, along with the American Medical Association and American Nurses Association, believe that a solution-oriented, collaborative approach to Ebola preparedness is essential to effectively manage the care of Ebola patients domestically. Our members are using the most recent guidance from the Centers for Disease Control and Prevention (CDC) and the resources available to them in order to continue to train nurses, doctors and other staff who would be involved in caring for these patients. Hospitals are repeatedly drilling and exercising on the entire course of care, from diagnosis to final waste disposal, using the same equipment on which they will rely in order to safeguard their staff, patients and communities. This includes proper procedures for putting on and taking off appropriate personal protective equipment (PPE) under the watchful eye of a trained observer and proper handling and disposal of waste.

Since this summer, when the CDC began to warn providers to be on the lookout for travelers from the Ebola-stricken region of West Africa, the AHA has shared information with the hospital field to help them prepare to detect, diagnose and safely treat potential Ebola patients. We continue to send numerous advisories and alerts to the field as new guidance and resources are

released. We also have convened multiple forums with officials from CDC and other agencies, as well as hospital leaders, to answer questions and share lessons learned. All of this information has been consolidated on our website at *www.aha.org/ebola*. It also includes links to lessons shared, video demonstrations and toolkits from hospitals with Ebola experience, such as Emory University Hospital and the University of Nebraska Medical Center, as well as state public health departments.

Below, we detail how hospitals are preparing and the standards they are meeting, as well as the resources hospitals need to assist them in these efforts. Ensuring safe care for patients and protecting health care workers and communities from infectious diseases like Ebola also demands the combined efforts of inter-professional, state and federal organizations.

HOW HOSPITALS ARE PREPARING

Hospitals take very seriously their responsibility to safeguard patients and the public's health. That includes the health of their staff. There is no more valuable resource than the selfless, caring women and men of America's hospitals. Assertions that hospitals would put financial considerations before the lives and health of their staff are outrageous and totally unfounded.

Using lessons learned from hospitals that have treated Ebola patients, and from caregivers working on the frontlines in West Africa, hospitals have increased their readiness to respond to the Ebola crisis. Below are just a few examples of how hospitals across the country are preparing their facilities, securing necessary supplies, training staff and repeatedly drilling to ensure everyone knows how to safely care for a patient with a suspected or confirmed case of Ebola. We can provide the Committee with additional examples upon request.

New York City Health and Hospitals Corporation (HHC). The largest municipal health system in the country with 11 acute care hospitals, HHC has been rigorously training staff and conducting drills on how to detect, diagnose, isolate and properly treat Ebola. Since mid-September, HHC has sent trained staff members pretending to be patients with potential symptoms of the disease – travel history, fever, headache and stomach pain – to all 11 of its emergency departments (EDs) to test their preparations. The drill takes staff through the detection and isolation stages, including the use of PPE. Once the "patient" is revealed to be an actor, staff review what occurred with trained observers to fine-tune their protocols. Hospitals throughout the New York City area are regularly conducting similar drills.

Florida Hospital. The health system has been preparing for the possibility of Ebola for months, stressing stringent PPE protocols and training. It has created an Ebola care team consisting of 100 health care worker volunteers from various departments, including the ED, respiratory care, critical care, obstetrics and pediatrics. The health care worker volunteers have received even more extensive hands-on training in the safe use of PPE. While any of the system's locations are prepared to identify and isolate a potential Ebola patient, two facilities have been designated to treat a confirmed Ebola patient. The rooms have their own ventilation systems, are separate from other patient units and have a separate entrance and exit. For more on their preparation efforts, see the video the system has created and shared.

Mount Sinai Health System. The system's seven New York-area hospitals and affiliated health providers, in conjunction with the New York City Department of Health and Mental Hygiene and Greater New York Hospital Association, sprang into action after the CDC's July 28 health advisory. The incident management system was activated, notifying the Chief Medical Officers, ED leadership, faculty and staff, and Infectious Disease Division. Providers quickly initiated procedures for the screening for travel and symptoms, isolation of suspected cases to ensure rapid evaluation, and notification and coordination of diagnostic testing with the local health department. An Incident Action Plan was developed and distributed targeting key areas such as EDs and outpatient clinics. Strict isolation protocols were put in place out of an abundance of caution, and an inventory of PPE was conducted. A screening tool was added to the electronic health record, and the physical plant was assessed to identify best locations for patient care. The system was tested on Aug. 4 when a patient with potential symptoms presented. He tested negative for Ebola, but the experience allowed the system to fine-tune its response. Like other New York hospitals, it continues to conduct drills and secret patient exercises.

External Partners. Hospitals continue to actively plan with their local partners, as well as the state. One example is on the management of ambulance Ebola waste. Ambulance providers need assistance with proper disposal of waste following the transporting and hand-off of an Ebola patient. Ambulance personnel also need assistance with the removal and disposal of their PPE. Hospitals and their local emergency medical services (EMS) providers have been working together to develop specific policies and procedures to address this area of their planning. Among other policies and procedures, hospital personnel (in appropriate PPE) will come out and meet the ambulance in the bay and transfer the patient to a designated area inside the facility. Hospital personnel plan to monitor and assist in the EMS personnel removal process, if needed. Hospitals also have an adequate supply of drums to collect, store and prepare for the hauling of medical waste, not only for their facility, but also for their EMS partners.

A MISSION OF SAFETY

Some have called for additional regulation of hospitals. As you will see below, however, hospital safety is already highly regulated. At best, new regulations would create additional burden for providers without improving safety for patients and health care workers. At worst, they could result in hospitals trying to navigate their way through conflicting and out-of-date requirements and stymie innovation that could result in better outcomes for patients, as well as hospital staff.

The existing infection prevention and control standards, including their assessment and enforcement by regulatory, accrediting and certifying bodies, have proven to be effective, functional and appropriate, and substantial resources are dedicated to their continuous maintenance and improvement.

Safety is our Highest Priority. The health and safety of every patient – and the health care workers who care for them – is hospitals' paramount concern. As such, hospitals and health care

systems have long had in place effective and comprehensive programs that protect patients and health care personnel.

Compliance is Not Voluntary. Continuous education and training of new and current employees is the cornerstone of hospital infection control and employee health programs. This includes ongoing practice and refresher training. These programs are not "voluntary," as some have suggested. They are mandated by the Centers for Medicare & Medicaid Services (CMS) and all accrediting agencies with deemed status from CMS, such as The Joint Commission. To participate and receive reimbursement from Medicare and Medicaid, hospitals must comply with program conditions of participation, and the standards of the accreditation organizations and state agencies. The basis for CMS's standards is evidence-based guidelines from the CDC.

Hospitals that do not comply with CMS standards risk loss of their Medicare and Medicaid certification, or even their operating license, if CMS determines the facility has unsafe conditions related to infection control standards or life safety codes.

Hospitals also must comply with the U.S. Occupational Health and Safety Administration's (OSHA) Bloodborne Pathogen regulations, General Industry Respiratory Protection standard and the General Duty clause. OSHA actively enforces compliance.

Improving Care and Safety for All. Hospitals devote much time and effort to facility-wide performance measurement and improvement. Hospitals are committed to a safety culture, as demonstrated through many successful programs focused on sustained infection reduction. According to the Department of Health and Human Services, hospital-acquired conditions decreased nine percent during 2011 and 2012. National reductions in adverse drug events, falls, infections, and other forms of hospital-induced harm are estimated to have prevented nearly 15,000 deaths in hospitals, avoided 560,000 patient injuries, and saved approximately $4 billion in health spending over the same period.[i]

RESOURCES KEY TO PREPAREDNESS

Preparedness is not a one-time investment. Rather, it is a dynamic process that changes over time. Hospitals and health systems have learned from each emergency situation, and it is crucial that they have the appropriate funding to adopt best practices, incorporate new technology into their emergency readiness plans and have the ability to care for their communities when a pandemic, disaster or terrorist attack occurs.

The Hospital Preparedness Program (HPP), the primary federal funding program for hospital emergency preparedness, has provided resources since 2002 to improve health care surge capacity and hospital preparedness for a wide range of emergencies. The HPP has supported enhanced planning and response, facilitated the integration of public and private sector medical planning to increase the preparedness, response and surge capacity of hospitals, and has led to improvements in state and local infrastructures that help hospitals and health systems prepare for public health emergencies. These investments have contributed to saving lives during many events, such as the Joplin tornado and the Boston Marathon bombing.

However, authorized funding levels and annual appropriations for the HPP have significantly declined since the program began. Congressionally authorized funding and appropriations for the HPP was $515 million per year in the early years of the program. The Pandemic and All-Hazards Preparedness Reauthorization Act of 2013 reduced authorized funding for the HPP to $374.7 million per year for fiscal years (FYs) 2014 through 2018. For FY 2014, Congress appropriated only $255 million for the HPP, more than a 50 percent reduction from prior years. Similarly, the president's FY 2015 budget proposal recommended only $255 million for the HPP.

While the HPP has been of assistance to hospitals, all too often, the dollars appropriated by Congress for hospitals have been siphoned off. In the current situation, as hospitals are on the frontline dealing with Ebola, there needs to be a dedicated fund that will provide assistance directly to them. At a minimum, if funds are to flow through the HPP, Congress should legislate that at least 90 percent of those funds be provided directly to hospitals.

State governments are working with their state hospital associations and hospitals to designate Ebola treatment facilities. While all hospitals are prepared to identify, isolate, protect patients and other health care workers, and contact their local health department and the CDC in the instance of a possible Ebola patient, hospitals are stepping up to be designated facilities in their individual states. Funding must be provided to all hospitals designated by a state, as they have assumed a greater responsibility. There should not be a limitation imposed at the federal level on funding for hospitals so designated by a state.

We appreciate the interest by the Congress in providing much-needed funds to combat Ebola both domestically and abroad. As stated above, however, we believe a dedicated funding stream needs to be provided to designated hospitals. In addition, we are working with a number of our designated hospital members to ascertain what level of funding they will need and look forward to working with the Committee. The examples below represent the needs of hospitals.

SUNY Upstate University Hospital in Syracuse is one of 10 New York hospitals designated by Gov. Andrew Cuomo to treat Ebola cases. The hospital estimates its cost of Ebola preparedness could be in the hundreds of thousands dollars. Most of the 555-bed hospital's costs are related to Ebola training, modifying physical plant and providing personal protective and diagnostic and other testing equipment for a four-bed Ebola unit.

The University of Nebraska Medical Center (UNMC) in Omaha, which has treated patients who contracted Ebola in West Africa, also says additional resources are needed. The resources should be aligned with those hospitals that are likely to receive patients and transfer them after they are initially identified and stabilized elsewhere.

The medical center required 40 to 60 staff members for each case. Five medical workers tended to a single patient during each 12-hour shift, plus laboratory and other staff. One room was taken up by the laboratory, which was moved closer to the patient to keep it separate from other samples, and two rooms were set aside for clean supplies and dirty supplies. Preparation is costly. UNMC estimates it cost about $1.6 million to treat the first two patients directed to them by the federal government. In addition to the direct treatment costs, the hospital estimates it has

incurred $148,000 so far in costs to take beds near the Ebola treatment ward out of service. As additional patients are directed to UNMC, the hospital will incur additional costs for treatment.

CONCLUSION

Ebola is a new disease in the United States. As such, it is understandably frightening for many. But America's hospitals and health care providers have a long history of battling new diseases – and defeating them.

Our nation's hospitals, professional physician and nursing organizations remain in communication with one another and with our nation's public health institutions at the local, state and national levels. We are committed to maintaining a strong collaborative effort to address this public health threat.

Hospitals are working hard to improve readiness and reassure their communities. They have learned from the experiences of organizations that have treated these first few Ebola patients and are updating the strategies they had put in place based on the latest scientific evidence and guidelines. They are taking the real-life experience of a handful of hospitals, and using it to strengthen the readiness of all.

We stand ready to work with the committee to enhance the safety of every patient, health care worker and community in America.

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[i] Department of Health and Human Services. May 7, 2014. Accessed at: http://www.hhs.gov/news/press/2014pres/05/20140507a.html.

Mr. BURGESS. And, Dr. Frieden, the administration's additional funding request states that money will go toward 50 Ebola treatment centers throughout the United States. Some States—Texas—have already started to designate sites on their own. So will State-designated centers be included in that number 50, or will that be in addition to?

Mr. FRIEDEN. I will comment, and Dr. Lurie may want to continue.

Our approach is to strengthen the statewide systems. It would be the States that would be responsible for—in collaboration and communication with hospitals, determining which hospitals would be used, but what we have asked each State to do is four things related to the active monitoring program. First, establish the program, including information flow from the State Health Department to local health departments. Second, establish a 24/7 hotline for any traveler or anyone who thinks they may have Ebola, to call so that they can be safely managed. Third, establish safe transport between wherever that person calls from, and the facility that the State has decided will be the facility to assess them or treat them for Ebola. And the fourth is to work with their hospitals to identify facilities that are able to do that assessment and treatment.

Mr. BURGESS. I would just add, it would be great if you had a 24/7 hotline for hospitals when they find that that suspected patient is on their doorstep at 3 o'clock in the morning.

But, Dr. Lurie, let me ask you the same question. The 50 centers that are designated in the President's budget request, is that in addition to the State-designated centers, or would those two State-designated centers in Texas fall under the purview of the 50 centers that President Obama is describing?

Ms. LURIE. So as Dr. Frieden said, our process and our plans have been to work through the States to identify facilities. The process works basically——

Mr. BURGESS. So make——

Ms. LURIE [continuing]. As such——

Mr. BURGESS. Make it real simple. The 2 centers that Governor Perry has designated in the State of Texas, do those fall under the parameters of what the President's budget request as it exists today?

Ms. LURIE. The funding will go to the States, and the States, in conjunction with the hospitals, will determine which of the hospitals will serve as infectious disease containment centers or the Ebola treatment centers.

Mr. BURGESS. I guess that is as close as I am going to get to an answer.

Let me just ask you a question, Dr. Lurie. Do you report to Ron Klain? Is that someone how who is in the hierarchal reporting structure that you have? Is he a person to whom you report?

Ms. LURIE. I report to the Secretary, and I interface with Mr. Klain on a very regular basis.

Mr. BURGESS. Well, in your testimony, you say that, under the national response framework, my office, your office is responsible for coordinating the Emergency Support Function Number 8 Response, which is listed here. So where does Mr. Klain's responsibility fall in the Emergency Support Function Number 8?

Ms. LURIE. So during different kinds of events in the United States, whether they are national disasters or whether they are other kinds of emergencies, either FEMA is activated, as it is for hurricanes and floods, and I know we have worked together in Texas on a number of those things, FEMA is activated in Emergency Support Function Number 8, public health and medical services are activated under that framework.

In other kinds of emergencies——

Mr. BURGESS. And that is—let me just interrupt for a minute. And that is under the coordination and control of Secretary Burwell, is that correct?

Ms. LURIE. Emergency Support Function 8, yes.

Mr. BURGESS. Does Mr. Klain have a role with Emergency Support Function Number 8?

Ms. LURIE. So in this situation, we have not had a declared national emergency, FEMA has not been activated, however, we do have, obviously, a very serious situation in the United States, and Mr. Klain is the national——

Mr. BURGESS. Let me interrupt you for a moment because——

Ms. LURIE [continuing]. Coordinator for this country.

Mr. BURGESS [continuing]. My time is going to run out. So I guess it is not fair to say that you have an emergency plan, but do you have a very serious situation plan that you are working under?

Ms. LURIE. We are doing very aggressive planning, both for what we have in the here and now, and for all the what ifs. And we work across HHS and with all of the rest of the components of the Federal Government on that what-if planning.

Mr. BURGESS. And I am going to assume that you will be able to make the details of that plan available to the committee staff?

Ms. LURIE. It continues to be in draft. We continue to work through the what-if with our partners across Government, yes.

Mr. BURGESS. Well, yes was the answer, you will——

Ms. LURIE. Yes, we can—when we have the rest of the plan together, it is something that is a whole-of-Government plan, it is not an HHS plan.

Mr. BURGESS. OK, well, it is time.

And then, Dr. Frieden, I just have to ask you. We had 2 nurses that worked at Presbyterian Hospital that were infected. I am just going to tell you, when you get that call at 2 o'clock on a Sunday morning that a nurse has been infected, you don't have a lot of confidence that things are working the way they were outlined.

Do you have any insight as to how those two nurses became infected, and what we can do to protect our healthcare workers going forward?

Mr. FRIEDEN. While we don't know definitively how those infections occurred, the evidence points to them having been infected in the first 48 hours after Mr. Duncan was admitted to the hospital, before his diagnosis was confirmed. That is consistent with the period of time between onset of symptoms and exposure. It is also consistent with the observations of the team from CDC that arrived on the day of diagnosis of Mr. Duncan, and found that in the intense efforts of the healthcare workers to protect themselves, they may have inadvertently increased their risk by some of the ways

that they were working with personal protective equipment. And that is why CDC immediately strengthened the margin of safety, and established new guidelines for personal protective equipment that include, as 2 critical components, practicing repeatedly so that healthcare workers have comfort with the equipment they will be using, and direct observation of every step of putting on and taking off the protective equipment.

Mr. BURGESS. And this just underscores why it is so important to have those treatment centers available around the country, because I can just tell you, the average ICU is not set up for that type of activity of the donning and doffing of the protective equipment.

I also have a problem with the time frame that you just enumerated because Mr. Duncan's family never became symptomatic, and I would suspect it is later in the course when he was throwing off really massive amounts of viral particles where the greater risk for exposure to those healthcare workers occurred, but I am sure you and I will have future discussions about that.

I will yield back.

Mr. MURPHY. And just to clarify, Dr. Frieden, during that time Mr. Duncan—at what point did he actually disclose that he had been in Western Africa and been exposed to Ebola?

Mr. FRIEDEN. My understanding is that he disclosed that he was from West Africa on the earlier emergency department visit, which started on the 25th of September. He was admitted on the 28th of September.

Mr. MURPHY. OK, thank you.

Now Mr. Green is recognized for 5 minutes.

Mr. GREEN. Thank you, Mr. Chairman.

And to follow up my colleague from Texas, I know our State has designated two locations, but about 2 months ago I was at the Texas Medical Center in Houston and there was some interest in trying to do that, too, and that may not be one of the two locations that the Governor has designated, but I will have a question later for Dr. Gold from the University of Nebraska how it was unique that the University of Nebraska created that facility there and how it happened.

But let me get to my questions for you, Dr. Frieden. What is the process and timeline for updating and communicating changes to protocols to local healthcare providers—because we know there was an issue about that last month—what is the process, or have the processes changed at the CDC from what we did, say, in October?

Mr. FRIEDEN. With respect to CDC guidelines, we use the latest data, information and experience to develop guidelines. We consult widely with affected parties to get input, and then as soon as we have a clear set of guidelines that we communicate, we then disseminate those through a wide variety of networks.

Mr. GREEN. What we have learned from the fear is isolation and personnel protection from the experience at Texas Presbyterian, and how are these lessons being shared with other hospitals so we can avoid the same errors. And, again, the feeling that somebody shows up at 3 o'clock at one of my not-for-profit hospitals in urban Houston, how are they going to be able to deal with something like that?

Mr. FRIEDEN. We are dealing with this from both sides of the equation. First, the patient side, and what we have done is for every single person coming from West Africa, they are greeted, they are asked detailed questions, their temperature is taken, and they are provided a care kit that includes a thermometer, a log for taking their temperature, a wallet card with a 24/7 number to call, and we have already had multiple times in the past few weeks individuals take their temperature, find that they had an elevated temperature, call that number, be safely transported to, and safely cared for in, a facility. They all ruled out for Ebola, but the system worked in those cases.

We can't guarantee that it will work in every case, and that is why we are working very intensively with hospitals throughout the U.S. to prepare them for the possibility that they could have someone with Ebola. We have released guidelines, we have done, in conjunction with the rest of HHS, training sessions, we have had hospital visits by rapid Ebola preparedness teams to more than 30 hospitals in more than 10 States, and we will continue to work intensively with the healthcare system so that they are increasingly well prepared to address a possible case of Ebola.

Mr. GREEN. The CDC is not a regulatory agency. How can you provide clarity over the CDC's authority and responsibilities in setting and enforcement of these protocols? Do you have any authority and enforcement over hospital settings?

Mr. FRIEDEN. CDC provides guidelines and information. We provide tools and feedback to facilities. We do not regulate in this area. That would be up to other entities within the Federal and State Governments.

Mr. GREEN. OK, thank you.

Dr. Lurie, without a commercial market, the development and manufacture of many medical countermeasures, like those against Ebola and other infectious diseases, require a public-private partnership. Congress recognized this when it created the Project Bioshield, successfully driving innovation by providing a stable source of funding so that a reliable market for medical countermeasures was in place.

Dr. Lurie, as you know, the development and medical countermeasure for a biological threat agent can take a decade or more, and often $1 billion to develop. The U.S. Government research on Ebola countermeasures goes back a decade, but the level of investment and urgency was not enough to prepare us for the current situation. Can you provide a dollar figure on how much investments you perceive is needed for Ebola vaccines and drugs to allow us to get to the chance of successfully developing a product?

Ms. LURIE. So I am sorry, I didn't hear the last part of the question.

Mr. GREEN. OK. Can you give——

Ms. LURIE. Could I provide a dollar figure for what?

Mr. GREEN. Can you provide us an estimated dollar amount on how much investment you perceive is needed for Ebola vaccines and drugs to allow us the best chance of successfully developing these products? Again, like I said earlier, our research program in Ebola has been going on for a decade. Are there any resources you

could use that would—and how much would we need to do to get the drugs——

Ms. LURIE. Absolutely.

Mr. GREEN [continuing]. And vaccines?

Ms. LURIE. And, in fact, one of the reasons that we now have two vaccines that are finishing safety trials is because of prior investments made across the U.S. Government in trying to develop an Ebola vaccine, and also with Ebola therapeutics. As you know—may know right now, those vaccines are finishing those early trials and, thanks to money that was provided in the CR, we have been able to accelerate some of the work both on vaccines and on therapeutics.

Whether these vaccines work is going to be something that we are going to learn over the next coming months with the trial in West Africa. At the same time, we have now gone ahead and invested in the advanced development of 3 other vaccine candidates, and additional ways of scaling up and making the therapeutics so that we never put all of our eggs in one basket. We always want to do better, and we will continue to do that through the investments.

We have really appreciated the support from Congress, from BARDA, and Project Bioshield in this regard.

Mr. GREEN. OK, thank you, Mr. Chairman. I know I am out of time, and I want to thank our colleague—our panel today, and I am waiting for our second panel.

Mr. MURPHY. Gentleman yields back.

Now I recognize the chairman emeritus, Mr. Barton, for 5 minutes.

Mr. BARTON. Thank you, Mr. Chairman.

And Congressman Green didn't want to brag, but he has a family member who is very active in this up at Nebraska, and we appreciate his family being on the frontlines, and I am sure he is—I think it is your daughter—isn't it your daughter that works up there? So we want to welcome out witnesses, and on the second panel, Dr. Lakey, from Texas, we are glad that you are here.

My first question, I am going to ask the Rear Admiral, the Acting Surgeon General. I believe that we should treat this first and foremost as a health issue and not as any other kind of an issue, and it puzzles me that we have not really effectively put in a travel ban from West Africa. I know we have alerted people and all of that, but when we had the hearing down in Dallas-Fort Worth, at the airport, the answer we got was because we need to send personnel over there, we don't want to prevent people traveling to here.

As a pier public health official, as the Surgeon General, why would we not put in a true quarantine and just flat prevent any travel from West Africa?

Mr. LUSHNIAK. Well, certainly, as stated, and have a strong belief in this, is that currently as we have it, you know, the idea of having a travel ban prohibits all travel. To some extent there is that sense of travel of healthcare workers to Western Africa, and I stated earlier the real resolution to this issue is solving the problem in West Africa, but at the same time, instilling a travel ban has a total loss of control of who enters and how they enter this country. And as Dr. Frieden stated earlier, we have set up these

systems, the systems that are in place right now allow us to know where people are coming from, it allows us to track them appropriately through the public health endeavors at the State and local level, and to be able ultimately to follow them appropriately, to be able to intervene if symptoms appear, and then be able to direct them, detect them appropriately and to instill the right response for that.

So right now as the system works, as the Acting Surgeon General, I find that the appropriate course of action.

Mr. BARTON. OK. Well, it just puzzles me, if we were to have a health outbreak, tuberculosis or something, there wouldn't be any question in my area that the Texas Department of Health would put a true quarantine in place. And I understand some of the external reasons, but, you know, if you are trying to contain an epidemic, it is old-fashioned but an absolute ban and absolute quarantine does work.

I want to ask Dr. Frieden, there has been some concern that perhaps we don't really know how this disease is transmitted, and unless something has come out very recently, some of the individuals in Texas that were potentially infected and put on the watch list had no apparent means of transmission, yet they were symptomatic. Is your agency conducting any research right now to see if perhaps there might be more methods of transmission than we think exist today?

Mr. FRIEDEN. We do a broad variety of research specifically on Ebola and on the public health spread and epidemiology of it. The two infections that occurred in this country of the two nurses at Texas Presbyterian are infections that occurred at a time when Mr. Duncan was highly infectious. He had production of large quantities of highly infectious material, through diarrhea and vomiting, and that would be our leading explanation of how they are most likely to have been infected, although we do not know for certain.

We describe what we see, and what we see in Africa is that people become infected by caring for or touching someone who is either very ill with Ebola or who has died from it. And when we analyze the amount of virus in a patient's body, it goes from undetectable when they are exposed but not ill, to very small quantities when they first become ill, and then as they get sicker, the quantities increase enormously. And if someone dies from Ebola, the quantities are quite large——

Mr. BARTON. Well——

Mr. FRIEDEN [continuing]. Of infectious material.

Mr. BARTON [continuing]. As a medical professional yourself, what is your confidence level that there is no other method of transmission than we know about today? In other words, are you 100 percent certain that there is no other way, are you 70 percent certain?

Mr. FRIEDEN. In medicine, we say never say never. So I would not be surprised if there were unusual occurrences of spread from a variety of ways, but the way it is spreading by and large in Africa, the way it spread here, and the risk to people here are brought by those two main mechanisms of touching body fluids of someone very ill. I will mention that one of the things that we looked at in our new guidance in the U.S. is what is done in U.S. healthcare

facilities is very different from what is done in African healthcare facilities. There is more hands-on nursing care. There may be artificial respiration or ventilation of someone, and that may generate infectious particles and that is why we have strengthened the level of respiratory protection in our personal protective equipment——

Mr. BARTON. Thank you.

Mr. FRIEDEN [continuing]. Guidelines.

Mr. BARTON. Thank you, Mr. Chairman. My time has expired.

Mr. MURPHY. Thank you.

Now I recognize Mr. Braley for 5 minutes.

Mr. BRALEY. Thank you, Mr. Chairman.

And, Dr. Lurie, I want to clarify some of the questions that Congresswoman Blackburn was asking you earlier because, at our first hearing on October 16, Dr. Fauci was kind enough to present us with some materials and walked us through them, including this product development pipeline, which I think you described in your testimony, talking about early concept and product development being the province of NIH, the advanced development being the province of BARDA, then commercial manufacturing by the industry itself, and then regulatory review. And then the next page in his presentation dealt with Ebola therapeutics and development. It is my understanding these are the treatments that are being developed for the symptoms of the Ebola virus, as opposed to a vaccine that would hopefully prevent the virus from spreading, correct? And then he had a slide that talked about the Ebola vaccines that were in or approaching phase 1 trial. The first one is the GlaxoSmithKline, the second one was NewLink Genetics, which is based in Ames, Iowa, and when I asked him questions about that at the time, and I also questioned Dr. Robinson, in this particular slide, it appeared there were only two companies; GlaxoSmithKline and NewLink, that actually had phase 1 trials ongoing.

Has there been any change to that since our hearing on October 16?

Ms. LURIE. Since the hearing on October 16, the phase 1 trials have been underway. They are almost completed. We are analyzing the data, and I think we are all very optimistic that we will be able to start the next phase of the trial, which will be a randomized control trial with both of those vaccines in West Africa.

Mr. BRALEY. This slide indicated that there was a third company, Crucell, but they were not expected to engage in phase 1 trials until the fall of 2015, which is a substantial ways away from where we are today.

Ms. LURIE. There are other potential vaccine candidates in the pipeline. We are supporting some of those, but you are right, they are behind this timeline, and we are right now focused on trying to figure out if these vaccines are safe and effective, and if they are, get them into use to control the epidemic in West Africa.

Mr. BRALEY. And——

Ms. LURIE. So part of the emergency funding request will be $157 million for BARDA to continue to accelerate the development and manufacturing of vaccines and therapeutics for this outbreak.

Mr. BRALEY. And my understanding from talking to the folks at NewLink Genetics is that these clinical trials that have been ongoing at Walter Reed and the National Institute of Allergy and Infec-

tious Disease have been progressing well, that there has been good rapport between the oversight agencies and the company involved, and that there is continuing to be ongoing interactions with the Department of Defense sponsors as well, which would be the Defense Threat Reduction Agency and the Joint Vaccine Acquisition Program. Is that your understanding as well?

Ms. LURIE. That is. In fact, every week, either once a week or twice a week, I run a call with all of the parties, NIH, CDC, FDA, BARDA, the DoD components, so that we are all joined at the hip through every step of the process. We know what is going on, we share information, we know what to anticipate.

FDA has been a really key partner in this as well because, in fact, it is their regulatory authority that is going to determine, you know, ultimately what moves forward and what doesn't, as well as, obviously, the results from the trial. I never thought I would find myself in this situation, but I am saying we are all racing to catch up with FDA. It is a great situation to be in, that everybody is working extremely effectively together.

Mr. BRALEY. Great.

Dr. Lushniak, Mr. Barton asked you a question about trying to contain an epidemic with an absolute quarantine. Is there an Ebola epidemic in the United States right now?

Mr. LUSHNIAK. There is not an Ebola epidemic in the United States. The epidemic is, at this point in time, limited to Western Africa, and once again, that is why we are trying to contain it there.

Mr. BRALEY. And one of the things that we have talked about during these hearings is the importance of focusing on facts and science and medicine. In 1900, the two leading causes of death in this country were influenza, pneumonia and tuberculosis, and neither one of those are a leading cause of death anymore because of the response of science and medicine and public health.

So when you look at the fact that, in 2012, there were 35 million people living with HIV around the globe, and that there are currently 14 to 15,000 diagnosed cases of Ebola, it seems to me that, with the proper application of science and medicine and public health, we should be able to manage this crisis if we devote the necessary resources on a global basis. Would you agree with that?

Mr. LUSHNIAK. Yes, I agree.

Mr. BRALEY. Thank you.

Mr. MURPHY. Mr. Scalise, you are recognized for 5 minutes.

Mr. SCALISE. Thank you, Mr. Chairman, and I appreciate you having this second hearing on Ebola. And I want to thank the panelists for coming. I would have liked to have seen Mr. Klain be a part of this. I know the committee has made a request for him to appear. I am not sure what, you know, if he is the Ebola czar, what his real role is if he is not going to be coming before the committees that hold the administration accountable, and have some transparency to talk about it. I hope he is not planning just to be a propaganda czar; that he would actually be focused on working with us to get solutions to this, but I do want to thank the panelists that are here.

Dr. Frieden, the last time that you were here we had talked about a number of things. One of those was the comments that we

heard from Samaritan's Purse. It is a group that is going to be on the second panel. I am not sure if you saw their testimony. One of the things I had asked you about were some of their comments they had previously made, that they were blown off, in essence, by your agency, and I had asked if you knew about that. You said you had heard about it, hadn't looked into it. Have you looked into it to see what is going on? There are some people in your agency that maybe warrant taking advice from groups like that seriously enough. Can you follow up on that last conversation we had about those complaints that Samaritan's Purse made?

Mr. FRIEDEN. I am not familiar with suggestions or complaints or concerns that have been raised with us that we have not addressed. I have received one communication from Samaritan's Purse, a very helpful communication about safety of our own staff, and we immediately acted upon that.

Mr. SCALISE. At the last hearing, I had read to you some comments that they had made. One was a quote where they said they kind of blew me off, and then they made some other comments that implied that maybe they weren't being taken seriously by your agency. They never said it was you, but I asked if you had looked into that or heard about it. Your quote was, "I don't know that that occurred," and then you had said you would look into it, and so that is why I was asking if you had looked into it since our last hearing.

They make some other claims in their testimony that they are going to give today. This is some of the comments that they make: "Many public health experts are telling us that we know the disease, how to fight it and how to stop it. Everything we have seen in this current outbreak, however, suggests that we do not know the science of Ebola as well as we think we do." Do you agree with that statement, or have any response?

Mr. FRIEDEN. I think we are certainly still learning about Ebola and what is the best way to fight it. That is a critical component of our activities, it is a critical component of the emergency funding request as well.

Mr. SCALISE. All right. They also say the disease has been underestimated from day 1. Do you know if that maybe was going on, is it still going on, do you think that it was being underestimated, maybe now not being underestimated to that level?

Mr. FRIEDEN. CDC publications estimated the degree of underreporting could be as high as a factor of 2.5 back over the summer. Our sense is that that is likely to have decreased in some areas. Fundamentally, the more out of control it gets, the more systems don't keep up with it, including systems to track the disease, and if patients don't have a place to come in, they are much less likely to be counted and accounted for.

Mr. SCALISE. Is there any new conversation that you have had with the administration, especially the White House, about what has been talked about by a lot of our Members of having some sort of travel ban, or at least a holding period for folks who are over there, having direct contact with people in West Africa that have Ebola, and then come back into the United States, to at least have some longer period to look at them to make sure they don't come

back with Ebola? Have you all had those conversations since we last met?

Mr. FRIEDEN. Yes, we have. My top priority as CDC director is to protect the American people, and I have said, and others have said, that we will look at anything that will reduce the risk to Americans. What we don't want to do is inadvertently make it worse by, for example, interfering with the system that we have now which allows us to track people when they leave, when they arrive, and for 21 days after. We are at 100 percent follow-up in most States for people who have come into this country, and that kind of system, if we don't have it, could result paradoxically in a greater rather than a lower degree of risk.

Mr. SCALISE. Well, let me ask you about Ron Klain because, again, we did ask that he come and participate in this. He has been designated by President Obama as the Ebola czar. Have you had contact with him about strategy about how to deal with this?

Mr. FRIEDEN. Mr. Klain is the Ebola Response Coordinator. I have frequent contact with him. He coordinates the response of different parts of the U.S. Government. He advances——

Mr. SCALISE. Have the two of you all had any disagreements on how to approach this?

Mr. FRIEDEN. No, we have not.

Mr. SCALISE. None. If you did, who would ultimately make the decision, if you felt we ought to go this way and he felt the administration ought to go that way, is there a hierarchy right now?

Mr. FRIEDEN. Mr. Klain has been very clear that technical decisions, scientific decisions that are the purview of CDC are made by CDC.

Mr. SCALISE. All right, I am out of time, and I appreciate your answers. And thanks for coming again.

Thanks. Yield back.

Mr. MURPHY. OK, gentleman yields back.

Now I recognize Mr. Tonko for 5 minutes.

Mr. TONKO. Thank you, Mr. Chair, and thank you to our panelists for your dedicated work on this issue, and for appearing before us today.

We have heard time and time again that the key to keeping the United States safe is to eradicate the virus at its source, and while we have had early indications of momentum begin to emerge in Liberia, it seems as if the situations in Sierra Leone and Guinea are not showing the same promising signs.

So, Dr. Frieden, in your opinion, do we have the resources deployed in these countries to turn the tide of Ebola, and if not, what additional resources are needed?

Mr. FRIEDEN. The emergency funding request is essential to our ability to both protect ourselves here at home and stop Ebola at the source, and also to prevent the next Ebola. There are too many blind spots, too many weak links in places in Africa and elsewhere where we have large amounts of travel, where we have animal-human interface, and we have large numbers of people, and that is why all three of the CDC components of this, and all of the components of the emergency funding request are so important. The three CDC related components are domestic preparedness, stopping

Ebola in West Africa, and preventing the next Ebola through our global health security work.

Mr. TONKO. Thank you. And I know that as of a few weeks ago, the count on the ground through CDC is four individuals from CDC in Guinea. While I know that France is taking the lead on Ebola response in this country, does the United States need to take a more leadership-active role, or does it have the capacity to do so?

Mr. FRIEDEN. Excuse me. For the CDC-specific response, we provide a comprehensive public health approach in each of the affected countries. As of today, we have approximately 175 staff on the ground in West Africa. We actually have the most staff in Sierra Leone, where the needs are greatest. We also have more than 20 staff, or roughly 20 staff, in Guinea, but there are additional needs for staff in Guinea, and we have worked very hard with the African Union and with other partners to get French-speaking staff there. With the cluster in Mali, we now have 12 staff as of today in Mali dealing with that cluster and trying to stop it at the source.

Mr. TONKO. And what about engaging a more international impact? How does the international community get engaged to devote its additional resources for this world health crisis?

Mr. FRIEDEN. There has been a very robust global response. My understanding is that currently contributions from other countries total more than $1 billion. The World Bank has been very proactive and effective. Also we have seen the UK stepping up in Sierra Leone, and increasingly French and EU support to Guinea and other areas.

Mr. TONKO. Um-hum. And, Dr. Frieden, we keep hearing that there is a great need for medical volunteers to travel to West Africa. Do you have a sense of how many medical personnel are needed, and how would one get involved?

Mr. FRIEDEN. For American healthcare workers, the U.S. Agency for International Development, USAID, maintains a Web site. On that Web site you can go and volunteer.

We ask that Americans who want to be involved do so through another organization, so they are not going as individuals but as part of an organized approach. And there is a broad need for assistance, including French-speaking assistance, including not just clinical care, but also epidemiologic interventions and public health measures.

Mr. TONKO. So that is reaching out for volunteers. Is there any activism in terms of encourage or recruiting personnel?

Mr. FRIEDEN. There has been quite a bit of effort by individual organizations within the U.S., as well as USAID. For our own part at CDC, we are looking at epidemiologists among not only our own staff, but former staff and people from the broader public health community who may be able to deploy.

What we are finding is that this is going to be a long road. It is going to take many months, and so we need people who are willing to go not just for a week or a month, but for several months or longer, so that they can get that maximum effectiveness by being there. Although for the clinical interventions, where you are working in the isolation unit, we would like to limit that to 4 to 6 weeks at most so people can be well-rested, and minimize their chance of taking a risk that might result in infection.

Mr. TONKO. Um-hum. And, Dr. Frieden, we have heard anecdotally that hospitals across the country are having difficulty sourcing PPE. What is the CDC's role in facilitating the PPE supply chain and the allocation of these PPEs, and could the U.S. ramp up manufacturing of PPE needed to contain a domestic Ebola outbreak?

Mr. FRIEDEN. Dr. Lurie and ASPR can address some of the manufacturing aspects. From the CDC perspective, we operate the Strategic National Stockpile. We have already stockpiled PPE to enable us to rapidly, within hours, deploy PPE to any hospital within the U.S. That is one of the components of the emergency funding request, but in addition, we have conducted what are called REP, or rapid emergency preparedness, visits to more than 30 hospitals in more than 10 States. One component of that is addressing whether they have sufficient PPE. We have prioritized hospitals near those five airports where people come in, or where a large number of the African diaspora live, and we already have identified dozens of hospitals which are prepared in terms of their procedures and have ample PPE, but we understand that not every hospital in America can get every amount of personal protective equipment they want, and that is why Dr. Lurie's office has been working closely with manufacturers to both ramp up manufacture and prioritize those facilities most likely to need it. And we have been working with the SNS, or Strategic National Stockpile, to have PPE that we could deploy very quickly to hospitals around the country.

Mr. TONKO. Thank you.

I yield back, Mr. Chair.

Mr. MURPHY. Thank you.

Mr. Harper is recognized for 5 minutes.

Mr. HARPER. Thank you, Mr. Chairman, and thanks to each of you for being here and shedding some light on this evolving situation.

And both you, Dr. Frieden, and you, Dr. Lurie, have told us that this emergency funding request supports non-immediate, non-Ebola-specific funding as part of this. Not all of this would be directly for Ebola, would it?

Mr. FRIEDEN. No, I would disagree with that.

Mr. HARPER. OK.

Mr. FRIEDEN. The request is divided into 2 components; immediate and contingency.

Mr. HARPER. All right.

Mr. FRIEDEN. All of it is addressing Ebola. It addresses it with respect to the CDC in three ways; domestic preparedness for Ebola and other infectious disease threats, because we think it would be most responsible to not only address Ebola, but also strengthen our system more broadly. Stopping Ebola in West Africa, and addressing the risk that there will be another Ebola outbreak, spread of Ebola, or spread of a disease like Ebola elsewhere in the world through the global health security component.

Mr. HARPER. Could not some of that be handled through the traditional appropriations process?

Mr. FRIEDEN. The situation is urgent with respect to Ebola. CDC models indicate that for each month of delay in control, the size of

the outbreak can triple. So as a CDC director, I am not going to address the mechanism, but I can say that the need for urgent funds, with flexibility in those use of funds, is crucial.

Mr. HARPER. If I could, Dr. Frieden, ask you, you had commented earlier that 2,000 travelers had been monitored, or are being monitored. How many are being monitored this moment? What is that number?

Mr. FRIEDEN. It is roughly 1,500. The number of travelers entering is lower than it had been previously.

Mr. HARPER. Who maintains that list of who is being monitored?

Mr. FRIEDEN. So every person who comes through, goes through the CBP process, Customs and Border Protection. We work in conjunction with CBP. That information is collected from the travelers, and within hours, we provide it to each State health department. We then monitor with the State health departments and resolve challenges, if someone is hard to find or moves from State to State.

Mr. HARPER. OK, are there any that were being monitored that you have lost track of?

Mr. FRIEDEN. A tiny fraction. Actually, less than 1 percent have been monitored and then not found. Some of those were later found to have left the country to go back on travel or otherwise. The program is relatively new, it only started about a month ago, and what we are finding is an excellent participation from the States and the travelers, but it is challenging, and one of the things that would be supported in the emergency funding request are funds for State health departments to operate those systems.

Mr. HARPER. And of those that are being monitored, how many are being told to seek medical attention?

Mr. FRIEDEN. We do expect that there will be a steady stream of people with symptoms. It you just take a set of 1,500 adults, you are going to expect some to have flu, some type of other illnesses, and from West Africa, more, because malaria is common. So, for example, in the past several weeks, there have been four individuals who used the care kit to check and report Ebola, that we provided them at the airport, took their temperature, found that it was elevated, called the number that they were provided with, were safely transported to a healthcare facility, and safely cared for there. They all ruled out for Ebola, but they were cared for in a safe way.

Mr. HARPER. All right, let me ask for just a moment. We talked a little bit today about waste management, and what to do about the waste of treated Ebola patients. Is any of that waste being transported across the country as part of this process?

Mr. FRIEDEN. My understanding is that some of the facilities are autoclaving it, and that the decision of the waste management companies was then to take that autoclaved material, which is, as far as everything we know, sterile, and then moving it to another State for incineration.

Mr. HARPER. OK, and so that is meaning that the waste is being transported across the country?

Mr. FRIEDEN. This is really a——

Mr. HARPER. I know it is being autoclaved, but anything not being autoclaved that is being transported?

Mr. FRIEDEN. I am not aware of anything in that category at present.

Mr. HARPER. If it is being transported through various States, are the States notified of that transport?

Mr. FRIEDEN. I am not familiar with the details. The EPA has been looking at different measures. They have had a meeting with the medical waste hauling industry to get input from them. We have worked with the Department of Transportation, and what we have done in the individual cases is ensure that there is the appropriate authority in place from the Federal level, from DOT, and from the State level for the management of waste.

Mr. HARPER. I yield back.

Mr. MURPHY. Mr. Long, you are recognized for 5 minutes.

Mr. LONG. Thank you, Mr. Chairman.

Dr.—is it Lushniak?

Mr. LUSHNIAK. Yes.

Mr. LONG. OK, you said that a travel ban, I think I am quoting you right, would cause us to lose contact on how many people are traveling to this country. What do you mean by that?

Mr. LUSHNIAK. Well, right now, we have a system, and the system is an open system. We know when people are entering, we know where they are coming from, we know, through our cooperative efforts with the Customs and Border Protection people, of when they are arriving. They are arriving through five funnels, airports, right now, and we have that connectivity. With a travel ban, you know, the essence of a travel ban is what—no one moves, however——

Mr. LONG. It is from those countries——

Mr. LUSHNIAK. It is from those countries——

Mr. LONG [continuing]. That are hot zones.

Mr. LUSHNIAK. But at the same time, there is this potential that people move from country A to country B, from B to C, from C to the United States, and they can very well be from Western Africa. So in our, you know, or my assessment of this, in essence, is what we have right now is a system, and a system that works following these individuals who are coming from Western Africa, from the affected nations——

Mr. LONG. But if they weren't coming, if we had a travel ban on them, how could we lose track of them?

Mr. LUSHNIAK. Well, through multiple routes. It is rerouting from one country to another, to another. In other words, the United States——

Mr. LONG. They are not going to have a passport or a visa or something that says where they started?

Mr. LUSHNIAK. Well, again, that system can be sort of worked around, if you will. You know, right now, we have a precise system, a system that is allowed to follow people who come in. We know where they are coming in from, which allows us to follow them.

Mr. LONG. I am from Missouri and you have to show me. I mean that doesn't follow to me, it doesn't make any sense that if we had a travel ban from these hot zone countries, if they weren't coming in from those countries, how we could lose track of them.

Mr. LUSHNIAK. Well——

Mr. LONG. If they are not coming in the first place——

Mr. LUSHNIAK. Um-hum.

Mr. LONG [continuing]. And if they want to do a workaround, we are going to have on their passport where they started, correct?

Mr. LUSHNIAK. Potentially, if the passports are correct, if they have not been manipulated.

Mr. LONG. Dr. Frieden, let me ask you. You were talking about the travel ban also, and you said that there are less people coming in now, and the last time we were here, I believe it was October the 16th, when you were last in to testify, at that time, the number we were using was 100 to 150 people per day. Do we know what that number is now?

Mr. FRIEDEN. From the data that I have seen until recently, it has been closer to 70 to 80 per day.

Mr. LONG. So it has been cut by about 50 percent for one reason or another.

Mr. FRIEDEN. That is my understanding.

Mr. LONG. And some people seem to think that if we just wrote a big check or gave you an unlimited checkbook, that this problem would go away. Do you think enough money would fix this problem?

Mr. FRIEDEN. I think we have the ability to stop Ebola, but that is going to require doing what the emergency funding request asks for, strengthening our system here at home, stopping it at the source in Africa, and preventing another Ebola or Ebola-like situation where the world is most vulnerable.

Mr. LONG. There was a story out yesterday on the AP, and I am sure you have seen the story, of a nurse that was diagnosed with Ebola in Mali, and she was diagnosed with Ebola after she had deceased. That is the first time they knew she had Ebola. And I know she worked in a hospital and a care center that dealt with the elite. Some people would probably call them the 1 percent of Mali, but she dealt with people in the elite, also U.N. peacekeepers that had been injured, and after she deceased, they found out she had Ebola and they didn't know where it had come from. And the first Ebola death in Mali was 8 days after we had our last hearing in here, I think it was the 24th of October was the first death. Then they went back and they were trying to figure out how she had contracted this, and then they went back and they found out that there was a 70-year-old gentleman that had come from, I don't know if it was Sierra Leone or where it was, but one of the—I think it was Guinea, he came from Guinea—and apparently the person that brought him to the hospital later deceased, they are not sure that was Ebola, but they found out that instead of kidney disease, he deceased from Ebola. And it is just disconcerting to me and my constituents how, in a hospital in that area, that they didn't even know that she obviously had symptoms before she passed away from Ebola. And one thing, just to wrap up really quickly, I know I am kind of hitting two or three different areas, but Dr. Spencer, we heard one of the folks on the other side of the aisle earlier say that he self-quarantined, took care of himself. Was he not very misleading—he didn't answer where he had been. He said he had been home in his apartment, and they checked the subway passes and they checked his credit card and things and found out that he had actually been to the bowling alley, that pizza parlor, and taking public transportation, did he not, in New York?

Mr. FRIEDEN. So in terms of the Mali situation, we have 12 staff on the ground there now.

Mr. LONG. Right.

Mr. FRIEDEN. And as——

Mr. LONG. And they have been there how long?

Mr. FRIEDEN. We have had staff in Mali since before their first case——

Mr. LONG. OK.

Mr. FRIEDEN [continuing]. Helping them with Ebola preparedness. And then the 2-year-old who died, who you mentioned, was unrelated as far as we know to the current case. The 70-year-old gentleman who died actually lives in a town that is on the border.

Mr. LONG. I am talking about a nurse that passed away, not a 2-year-old. I didn't mention a 2-year-old, so this——

Mr. FRIEDEN. No, the source case for that nurse is the 70-year-old who you mentioned, sir. He lived in the town of Kurmali, which is on the border between Mali and Guinea, and his Ebola diagnosis was not recognized. He had other health problems. People thought he had died from the other health problems. And there is now a cluster of cases there, and we are working very intensively to try to stop it because, given the challenges of Mali, if Ebola gets into Mali, it is going to be very hard to get out, so we are hoping to be able to stop that——

Mr. LONG. And they went back 3 weeks later and tried to sanitize the mosque that he had been prepared for burial in, correct?

Mr. FRIEDEN. That is my understanding.

Mr. LONG. So I would like to see, as I said back on the 16th, a travel ban, and I still don't understand how you can lose track of people that never came in the first place.

I yield back.

Mr. MURPHY. Thank you.

Mrs. Ellmers, you are recognized for 5 minutes.

Mrs. ELLMERS. Thank you, Mr. Chairman, and thank you to our panel.

Dr. Frieden, one of the things that I have been doing is reaching out to the hospitals in North Carolina, and in my district alone, I have a number of hospitals that are saying that they are experiencing delays in receiving some of the protective equipment and protective wear that they need—specifically, a short supply of Tyvek suits, shrouds, and N95 masks. They are being told that it could be 6 to 8 weeks, or possibly even longer. What role does the CDC play in this, and why would there be a delay in this equipment?

Mr. FRIEDEN. We have looked at three levels of hospitals. First, the hospitals around the airports. We want to make sure that they have ample supply. Also, the hospitals, I should say, which are the specialty facilities like Nebraska, Emory and NIH. Second is the facilities where large numbers of people from the African diaspora live, where we might have another case. And third is all of the other facilities in the country. And given the number of facilities, there is not currently enough PPE on the market of some of the products to give every hospital as much as they would like.

At CDC, we have a Strategic National Stockpile, and that stockpile already has enough PPE to distribute to hospitals that ur-

gently need it within hours. We also have worked, through our rapid Ebola preparedness teams, or REP teams, with several dozen hospitals around the country to get them ready. When we work with them, we have found that, although they might have shortages of some protective equipment, they have been able to meet those shortages by contacting the manufacturers. And I understand that what Dr. Lurie and her office has done is to work with the manufacturers to both scale up, so they are working very hard to produce more, and prioritize facilities that are most likely to need supplies. For some of the products, such as N95s——

Mrs. ELLMERS. Um-hum.

Mr. FRIEDEN [continuing]. We have ample supplies in the Strategic National Stockpile, and we could provide as needed.

Mrs. ELLMERS. OK. And, Dr. Lurie, do you want to comment on that as well?

Ms. LURIE. Sure. One of the things that my office has done through our critical infrastructure programs, since the very beginning, is we try to work with the manufacturers and distributors.

Mrs. ELLMERS. Um-hum.

Ms. LURIE. I have personally spoken to the leadership at each of the manufacturing companies, and each of them now have gone to 24/7——

Mrs. ELLMERS. Manufacturing.

Ms. LURIE [continuing]. Three shifts a day manufacturing.

Mrs. ELLMERS. Um-hum.

Ms. LURIE. In addition, they have all made a commitment to work with us, and we are actively doing this so that if a hospital is on our first list of being——

Mrs. ELLMERS. Um-hum.

Ms. LURIE [continuing]. Really ready to take care of Ebola patients, or needs PPE urgently, they will prioritize the orders.

What they told me, very interestingly, is that because a lot of people are frightened, that many hospitals are, they think, double and triple ordering PPE from different distributors and different manufacturers because they want to be sure that they get some.

Mrs. ELLMERS. Um-hum.

Ms. LURIE. So part of our job is to be sure working within that people get what they need. And as Dr. Frieden said, through the Strategic National Stockpile, we are very confident that we can get enough PPE to any hospital that has an Ebola patient.

Mrs. ELLMERS. OK.

Ms. LURIE. We also want to be sure that they have enough. The manufacturers and distributors have also developed some training material, so you don't have to train on real PPE. They will go out to a facility——

Mrs. ELLMERS. Um-hum.

Ms. LURIE [continuing]. And let you use other kinds of——

Mrs. ELLMERS. Um-hum.

Ms. LURIE [continuing]. Samples to practice.

Mrs. ELLMERS. To practice, OK.

Dr. Frieden, in relation to travel, I have been in touch with my local airport, Raleigh-Durham International, and obviously, that is not one of the five designated airports, but I am concerned about our Customs and Border Protection officers. They are the first line.

They would be the first to come in contact. They are not healthcare professionals. With this increased threat of Ebola, has the CDC prepared or dedicated additional funds to those airports outside of the five designated to help with training and personnel issues?

Mr. FRIEDEN. Part of the emergency funding request is to ramp up some of the quarantine services. Our focus is working in the five funneled airports now, and we have worked very closely with Customs and Border Protection. It has been an excellent partnership. We have provided training, information, but we understand that there is a desire for more information. With the funneling process, we are now able to ensure that almost all travelers go to those five airports.

Mrs. ELLMERS. One last question: Is the CDC working with OSHA and Department of Labor on helping hospitals to be trained and up and ready for the preparedness?

Mr. FRIEDEN. Yes, OSHA has been part of the CDC teams and offers its services and information to hospitals that are working on preparedness.

Mrs. ELLMERS. OK, great. Thank you.

Mr. FRIEDEN. Thank you.

Mrs. ELLMERS. And I just want to say also that I wish that Mr. Klain was here with us today as part of this panel because I think the information that our new Ebola czar—that he could provide some very important information, so I just want to state that. Thank you.

Mr. MURPHY. The gentlelady yields back.

I now recognize Mr. Olson for 5 minutes.

Mr. OLSON. I thank the Chair. And welcome to our witnesses.

My home is Texas 22. It is a suburban Houston district. Many folks who live there work down at the Texas Medical Center, and many live in rural parts of Texas 22. Needville, Texas, where cotton is still king.

The Ebola case in Dallas spooked them. It spooked them badly. Two schools in Cleveland, Texas, shut down for days because two students were on a flight coming back from Cleveland with that nurse who had been exposed. Cleveland is closer to Houston than it is to Dallas. Galveston, Texas, had a cruise ship docked there came home early because a nurse from Dallas self-imposed-quarantined herself in her cabin. The waste coming from Dallas is coming down to Galveston UTMB to be incinerated in 55 gallon drums, 1,800 degree Fahrenheit to completely burn the waste from treating Ebola cases in Dallas.

Everything that goes to Galveston comes through Texas 22. One common frustration I have heard over and over back home is the deluge of information coming from CDC and all of you all. It is confusing and overwhelming. I have heard that from big hospital systems and small providers. Emergency centers like St. Michaels in my own town of Sugarland, Texas. I am worried about the little guys like St. Michaels.

Now, the question for all three panelists, the first one is for you, Dr. Frieden. What is your organization doing to ensure that small guys like St. Michaels are ready if an active Ebola patient shows up at 2:00 in the morning on Thanksgiving night?

Mr. FRIEDEN. Three things. First, we are working with the travelers themselves so that they know where to go, they have a number to call, they are checking their own temperature so that they can promptly identify if they have symptoms and be cared for before they become severely infectious. Second, we are providing information through our Web site, through webinars, through demonstration and training practices to hospitals throughout the U.S., as well as hands-on training through our REP teams and our CERT Teams if there were to be a case. And third, we are working very closely with State health departments which we really think are key here. And one of the critical components of the emergency funding request is strengthening and providing more resources to state health departments exactly for this; to strengthen infection control for Ebola, other deadly threats, and things that are daily endangering the health of patients throughout the country. And we think that state health departments and hospitals have a critical role to play, and to maximize the impact of that, it will require the resources and it will require taking an approach that addresses Ebola as well as other deadly threats, and strengthens our everyday systems of infection control.

Mr. OLSON. Dr. Lurie, how about yourself, ma'am? HHS helping St. Michaels?

Ms. LURIE. Helping St. Michaels? Well, so one of the things that we have done through our Hospital Preparedness Program is reach out to all of the hospitals around the country. Hospitals are now organized into coalitions, which are community-level collections of hospitals and dialysis facilities and nursing homes and others. Texas has a very well organized system of this, and reaching out through them, they are able to reach to St. Michaels, number one, to say if they needed personal protective equipment, could they get it through their coalition. If they needed help with exercises and training, they could get it through their coalition. Number two, as I mentioned before, we have had a very aggressive national outreach and education campaign that has been open to healthcare providers, including healthcare providers from St. Michaels and anywhere else around the country. People can take advantage of numerous phone calls and webinars. They have reached nurses, they have reached doctors, they have reached hospital administrators, they have reached EMS professionals around the country. At this point, we have reached over 360,000 people across the United States with this.

So finally, it is our goal that every hospital, including hospitals like St. Michaels, will be able, as Dr. Frieden says, to think Ebola, to recognize a case, to safely isolate a case, and to be able to get help. And finally, through the state health departments, and I know you will hear from Dr. Lakey——

Mr. OLSON. Yes.

Ms. LURIE [continuing]. In a little while, they call the state health department, and if they have questions or concerns about a patient with an Ebola-like syndrome, the state is in a very good position to help as well.

Mr. OLSON. And, Dr. Lushniak, after your question, but one more question to you, Dr. Frieden. You were quoted on October 2 saying,

this is a quote, "Essentially, any hospital in the country can take care of Ebola." Do you stand by that quote today? Any hospital.

Mr. FRIEDEN. Clearly, it is much harder to care for Ebola safely in this country than we had recognized. It is the case that every hospital in America should be ready to recognize Ebola, isolate someone safely, and get help so that they can provide effective care. That is why we established the CERT Team, CDC Ebola Response Team, that will fly in at a moment's notice for a highly suspected or confirmed case, to help hospitals throughout the country.

Mr. OLSON. Thank you.

Yield back.

Mr. MURPHY. Now I recognize Mr. Johnson for 5 minutes.

Mr. JOHNSON. Thank you, Mr. Chairman. And I too want to thank the panel for joining us today. Thank you very much.

Dr. Frieden, have any other States also applied stricter standards than the CDC has in terms of how to handle Ebola?

Mr. FRIEDEN. CDC guidelines are just that, for States, and States are free to be stricter than that. We are gratified that most have followed our standards, and really what we say is pretty clear——

Mr. JOHNSON. But do you know if any States have stricter standards?

Mr. FRIEDEN. Yes, some do.

Mr. JOHNSON. OK. All right. Why do you think the States are adopting stricter standards than the CDC? Are you confident that your standards, the CDC guidelines and standards, are strong enough?

Mr. FRIEDEN. We believe that our standards, if followed, are protective of the public. They require that people who may be at any elevated risk, or some risk, rather, those individuals have their temperature monitored every day by direct active monitoring. And that is something that allows us to interact with the person, to talk with them, and to determine on an individual basis if they should stay home that day, or if it might be reasonable to allow them to do other things.

Mr. JOHNSON. Have you talked to any of the States that have stricter standards, to find out their rationale for the stricter standards?

Mr. FRIEDEN. I have had some communication with some of the individuals involved, and understand some of their thinking process. The number of individuals who are subject to those stricter standards is really quite small, and all of those individuals, by our standards, should be in what is called direct active monitoring, which means someone actually watches them take their temperature each day, has a conversation with them, and confirms that they are healthy and don't have a fever.

Mr. JOHNSON. OK. The last time that you were with us, we talked about having tested these standards. Have the standards been fully tested, the guidelines been fully tested across the country, back to what my colleague from Texas just mentioned, so that every hospital knows what to do? Have they been tested?

Mr. FRIEDEN. So the standards in monitoring travelers are being implemented now by every State in the country, or virtually every

State in the country, tracking people coming back from West Africa, monitoring them for fever——

Mr. JOHNSON. Have they been tested?

Mr. FRIEDEN. I am not sure I understand your question, but with respect to the traveling——

Mr. JOHNSON. Then let me explain the question. You know, going back to my military experience, and I think some of the gentlemen here can understand that, we do things called operational readiness inspections. We don't wait for the bullets to start flying before we know what we are going to do when they do start flying. You come to Appalachia, Ohio, there are lots of little community hospitals that dot our region. Are those hospitals fully up to speed, have they tested and have they signed off on any kind of guidelines that they have tested their Ebola process?

Mr. FRIEDEN. In terms of hospital preparedness, many hospitals have undertaken drills. We have also——

Mr. JOHNSON. Has CDC mandated any drills to——

Mr. FRIEDEN. CDC does not mandate that hospitals do drills. We provide guidance, support, and resources for hospitals to do that.

Mr. JOHNSON. Have you recommended that they conduct drills?

Mr. FRIEDEN. Yes, and we have been directly involved with them in doing that, and we have reviewed for the REP-visited hospitals, those that are most likely to receive a case, we have visited those hospitals, we have overseen their drills, we have overseen their preparedness, and we have worked with them on advancing their preparedness.

Mr. JOHNSON. OK. It is my understanding there are several Ebola centers scattered across the country, also referred to as infectious disease centers. Most of them have a patient capacity of one to two people. As of right now, most individuals with Ebola treated in the United States have been transported to one of these centers to better manage their illness.

In the event that a larger number of cases were to show up in the U.S., how does the CDC plan to treat a patient load that exceeds the capacity of available bed space in those centers?

Mr. FRIEDEN. The challenge of a cluster of Ebola would be substantial, and it would be a matter of using all available——

Mr. JOHNSON. Define a cluster.

Mr. FRIEDEN. It would be a handful of cases. It could be 5 or 10 cases.

Mr. JOHNSON. OK.

Mr. FRIEDEN. In a kind of practical worst case scenario, this is something that could be seen. In this case, we would use all available local resources, if need be, surging healthcare workers in, and we would also transport patients to facilities around the U.S. where they could be treated.

Mr. JOHNSON. These centers are set up to handle one or two patients because of the unique requirements of the disease, the virus. Do we have transportation systems that are capable of transporting Ebola patients if that outbreak were to be bigger than the one or two that we are talking about?

Mr. FRIEDEN. We have some transportation facilities for Ebola patients in the U.S. We are working with the State Department and others to increase the capacity to transport patients.

Mr. JOHNSON. What about those who might be transported to other places, would they be receiving lower quality care, in your mind, than at one of the infectious disease centers?

Mr. FRIEDEN. No, we think the quality of care can be provided. It is really an intensive care unit care, and CDC clinicians have consulted on the care of every single patient cared for in the U.S., and provided to each and every one of them access to experimental treatments and state-of-the-art care.

Mr. JOHNSON. OK.

Mr. MURPHY. Gentleman's time has expired.

Mr. JOHNSON. Thank you. I yield back.

Mr. MURPHY. Thank you.

Ms. DeGette, do you have questions that you wanted to ask?

Ms. DEGETTE. Go ahead.

Mr. MURPHY. She is going to yield at this point.

I now recognize Mr. Griffith for 5 minutes.

Mr. GRIFFITH. Thank you, Mr. Chairman. Dr. Frieden, I am going to try to move through these as quickly as I can, so I appreciate short answers.

You are aware that the Secretary of HHS is able to transfer funding from your department to other departments, isn't that correct? She can take funding from your department and stick it somewhere else, isn't that correct?

Mr. FRIEDEN. There is limited transfer authority as far as my understanding goes.

Mr. GRIFFITH. And when that happens, are you notified, is she required to tell you that she has transferred funds?

Mr. FRIEDEN. As far as I know, yes.

Mr. GRIFFITH. And has the Secretary transferred funds in 2014 from the division of Emerging and Zoonotic Infectious Disease?

Mr. FRIEDEN. I——

Mr. GRIFFITH. Yes or no?

Mr. FRIEDEN. I don't know the answer to that off-hand. I could get back to you with that information.

Mr. GRIFFITH. If you could get that information for me?

Mr. FRIEDEN. Yes.

Mr. GRIFFITH. And I believe that that particular division would be a part of the Ebola response, I am correct in that?

Mr. FRIEDEN. That is correct.

Mr. GRIFFITH. And do you know whether or not the Secretary has transferred money from the CDC's global health programs?

Mr. FRIEDEN. I would have to get back to you on that as well.

Mr. GRIFFITH. All right. Likewise, the same would be on the CDC's Public Health Preparedness and Response Division?

Mr. FRIEDEN. I would have to get back to you.

Mr. GRIFFITH. And both of those also would be a part of your Ebola response, wouldn't they?

Mr. FRIEDEN. Yes, they would. Yes, they are.

Mr. GRIFFITH. Now, you have indicated that you don't know about whether these monies were transferred. Do you know if any monies were transferred at all during 2014? Do you have any information?

Mr. FRIEDEN. There is a Secretary's transfer, but I don't know the details of what has been done.

Mr. GRIFFITH. OK, and so you don't know the details. So you would not know if any of this was transferred to help support the financial underpinnings of the Obamacare, ACA?

Mr. FRIEDEN. I don't—I do not know.

Mr. GRIFFITH. And likewise, do you know if any transfers were made by the administration for children and families to care for increasing number of unaccompanied children who arrived in the United States?

Mr. FRIEDEN. I am not familiar with that financial——

Mr. GRIFFITH. You are not familiar with that, but would you get us the answers to all of those?

Mr. FRIEDEN. We can certainly get you those answers.

Mr. GRIFFITH. Likewise, I am curious, the President apparently has requested a fair amount of money, and part of that is related to Ebola and part of that is $1.54 billion in contingency funding. Some of that is supposed to go to HHS, it says in his letter, to make resources available to respond to evolving epidemic both domestically and internationally. And I am looking here and it says that, while $751 million of that is to go to HHS, it then talks about transferring those funds over to Homeland Security to increase Customs and Border Control operations. Have you been in the loop on that? Do you know what kind of money you all are getting, and what are they talking about with Customs and Border Control operations?

Mr. FRIEDEN. We work very closely with the CBP, and we understand the need for contingency funds for Ebola in case, for example, Ebola would spread to another country that required a very intensive, extensive response. So that flexibility is a critical component of the emergency funding request.

Mr. GRIFFITH. OK, and that funding request is, as was pointed out in an editorial by David Satcher, and I hope I am pronouncing that right, a former director of CDC, and a former Surgeon General. That request by the President is actually greater than what we have been spending on Alzheimer's, isn't that correct?

Mr. FRIEDEN. I don't know Alzheimer's funding details off-hand.

Mr. GRIFFITH. All right, and in regard to Mr. Klain, have you all had sit-down, face-to-face meetings?

Mr. FRIEDEN. Yes.

Mr. GRIFFITH. And how many of those meetings have you all been——

Mr. FRIEDEN. Well, I would have to get back to you with the exact number.

Mr. GRIFFITH. If you could give me that number, I would greatly appreciate that. That would be very, very helpful.

Now, in some of the outbreaks in the past, historically, in Ebola that have occurred in Africa, isn't it true that there are sometimes that we have an outbreak and we don't know where the disease actually came from, where it was picked up?

Mr. FRIEDEN. We have not identified definitively the animal reservoir of Ebola. We think it may be bats or bush meat, but we have not determined that. We have determined it for a similar virus, Marburg, from research that CDC scientists did.

Mr. GRIFFITH. And the meat, I understand. The bats, would that be from excrement? I mean how would the bats spread it, or are they eating the bats as well?

Mr. FRIEDEN. Well, it may be saliva, it may be carried—bats, as mammals, carry a lot of pathogens that are similar to the pathogens that infect humans.

Mr. GRIFFITH. But this is just 1 of many areas where we are not really 100 percent sure of how the disease is spread, particularly in Africa?

Mr. FRIEDEN. Well, I would clarify. We are not sure of the animal reservoir. From all of the experience we have had spread among human populations is from either unsafe care or unsafe burial in the outbreaks that we have assessed so far.

Mr. GRIFFITH. So that is once there has been an outbreak, but there are occasions when the outbreak just starts and nobody had it there before, so it couldn't have come from human contact, it had to come from this animal reservoir, and we are not sure exactly what animals carry it, whether or not it is, you indicated spittle, excrement, what else? We do know that it is transmitted if you eat a diseased animal, is that correct?

Mr. FRIEDEN. It may be actually not so much the consumption of bush meat, but the hunting and handling and cleaning of bush meat where you may get exposed to blood and other body fluids.

Mr. GRIFFITH. OK.

I appreciate it, and yield back.

Mr. MURPHY. Now recognize Ms. DeGette for 5 minutes.

Ms. DEGETTE. Thank you, Mr. Chairman. And I want to apologize to you and to the panel for running in and out. The Democratic leadership right now is actually working on who our next ranking member of this full committee is going to be. It is not going to be me. Thank you for your vote of confidence. And so I just want to ask a few questions, and then I am going to leave you in the capable hands of Mr. Green.

Dr. Frieden, the first thing I wanted to talk to you about is the contingency fund that has been requested in the emergency supplemental. What exactly is the purpose of that fund, and what would it be used for?

Mr. FRIEDEN. The contingency fund is to deal with the unpredictable nature of Ebola, the possibility that it might spread to countries where it is not currently in place, and might require very extensive, expensive control measures there. Also that we might have new interventions, such as a vaccine, and need a large and potentially expensive program to implement a vaccine program in affected communities and for healthcare workers.

Ms. DEGETTE. And why would you need to do that through a contingency fund and not through an additional emergency supplemental, if either of those situations presented themselves?

Mr. FRIEDEN. You know, in the words of one of my staff at CDC, in the case of Ebola, it is the lack of speed that kills. We need to be able to respond very quickly to changing conditions on the ground.

Ms. DEGETTE. And we are seeing that right now in Africa, is that right?

Mr. FRIEDEN. That is. There——

Ms. DEGETTE. Everything is changing very quickly in Africa.

Mr. FRIEDEN. Absolutely. We are responding to a cluster in Mali, we are moving out with CDC disease detectives into very remote rural areas to address clusters of disease before they become large outbreaks.

Ms. DEGETTE. Do you have a sense of why the number of cases in Liberia has recently dropped?

Mr. FRIEDEN. We believe this is proof of principle, that the approach that we are recommending can work, but we are still seeing large numbers of cases in at least 13 of the 15 counties of Liberia. We have seen that decrease taper off so that we have seen a leveling-off of cases that have been reported. Every one of those cases needs intensive follow-up, contact tracing, monitoring of contacts, and we are still having perhaps between 1,000 and 2,000 new cases per week in West Africa, so this is still a very large epidemic.

Ms. DEGETTE. And that kind of leads me to my final question, which is, you have said repeatedly, and, frankly, there has been a lot of pushback on this, not just from this committee but from lots of other folks, you have said repeatedly that you don't think that travel bans and quarantines are the way to go about addressing this, and I am wondering if you can tell us whether that is still your view, and if so, why, and if it is not, why not?

Mr. FRIEDEN. We are willing to consider anything that will make the American people safer, any measure that is going to increase the margin of safety, and one of the things that we have done is to implement a travel system so that people leaving these countries are screened for fever, arriving in the U.S. are monitored for fever, are linked with the local health department. We are now working with State and local health departments to monitor each of those individuals each day, and we are seeing very high adherence rates to that. So we have a system in place now.

The risk to the U.S. is directly proportional to the amount of Ebola in West Africa. The more there is, the higher our risk. The less there is, the lower our risk. We have to reduce the risk there by attacking it at the source, but whatever we can do to reduce the risk to this country, we are certainly willing to consider.

Ms. DEGETTE. So you would still consider a travel ban if that seemed like the only solution?

Mr. FRIEDEN. If there were a way to ensure that we didn't lose that system of tracking people through every step of their travel, and once here, we would consider any recommendation, but it is not CDC that sets travel policy for the U.S. Government.

Ms. DEGETTE. Right. And what I am concerned about is if Ebola goes to other countries, and in Africa in general, it will be harder and harder to trace where people came from.

Mr. FRIEDEN. The spread of Ebola to other places in Africa is one of the things that we are most concerned about because it would make it much harder to control. We were able to work with Nigerian authorities to stop the cluster in Nigeria. Right now, Mali is in the balance of whether we will be able to stop the cluster there before it gains a foothold in Mali. But the longer it continues in the 3 affected countries, the greater the risk that it will spread to other countries.

Ms. DEGETTE. OK, thank you.

Thank you very much, Mr. Chairman.

Mr. MURPHY. Gentlelady yields back.

Now Mr. Terry is recognized for 5 minutes.

Mr. TERRY. I ask unanimous consent to be able to ask questions.

Mr. MURPHY. Yes, you are recognized, yes.

Mr. TERRY. Thank you.

Dr. Frieden, from Nebraska, I am really proud of the efforts of University of Nebraska Med Center. At least we are top in something. It is not football, but it gives us a sense of real pride, despite the last patient's outcome, which they did heroic efforts. But also in that regard, they seemed to have been the ones that, especially in comparison to the Dallas Presbyterian Hospital, were setting the standards on the practices.

And so that begs the question, or at least we should ask the question, of whether the CDC should develop an accreditation type of program on infectious disease programs to ensure that these hospitals maintain a level of competency and readiness.

Is something like that ongoing?

Mr. FRIEDEN. Well, first, we really appreciate the facility in Nebraska and their willingness to step forward, and the phenomenal care they have provided to all the patients who have come to them, and despite the outcome of the physician recently, we know that heroic measures really were undertaken, and the staff there really deserve the gratitude of all of us, and we appreciate them. We appreciate also their willingness to consult with other facilities, and to share their experience because that is critically important.

Mr. TERRY. Which they have done, and I——

Mr. FRIEDEN. Yes.

Mr. TERRY [continuing]. Again, hospitals like Johns Hopkins asking them how to do it is a source of pride for us as well.

Mr. FRIEDEN. What we have approached is something called the REP Team, the Rapid Ebola Preparedness Team, where we send a team in to work with the facility, to outline every aspect of their preparedness, and to see how ready they are, and then to provide recommendations for what more they can do.

We have also worked with the State health departments so that they can determine which of the facilities within their State that are most appropriate to take patients with Ebola or other infectious diseases, because they are really best prepared for that.

In terms of accreditation, that is something that we have discussed with the Joint Commission. Whether that makes sense in the long run or not is something that we are open to exploring.

Mr. TERRY. All right, as a layperson, it seems to make sense that you would have an area where there is one hospital that has that level of accreditation. And then it begs the question that if they are going to be that go-to hospital in a region or a State, whether there should be maintenance funding behind that. What do you think?

Mr. FRIEDEN. We certainly believe that they should receive resources. There is funding within the emergency funding request, both from CDC and from ASPR, to support specialty facilities such as the one in Nebraska.

Mr. TERRY. And so the question then is, just to clarify, would that be part of the President's requested dollars?

Mr. FRIEDEN. Yes, it is.

Mr. TERRY. Dr. Lurie?
Ms. LURIE. Yes, it is.
Mr. TERRY. Very good.
Ms. LURIE. Yes.
Mr. TERRY. So, Dr. Frieden and Dr. Lurie, one of the experiences here is that we know that, let us see, UNMC I think has 11 units, but the reality is they can probably only have three patients at a time because of all of the collateral circumstances. So do we need more bio-containment units like what Emory and UNMC have? Dr. Frieden?
Mr. FRIEDEN. We think we need some increase in the number of facilities that can safely care for someone with Ebola, or another deadly infection. We have been working very closely with hospitals throughout the country to increase that capacity, and the emergency funding request would enable us to really get to the level where we would have a greater degree of comfort with the facilities out there and the capacities.
Mr. TERRY. Well, just to clarify that some of the dollars that would be in the emergency funding, the President's request, would be to expand the number of bio-containment units?
Mr. FRIEDEN. Yes.
Mr. TERRY. Very good. And one of the questions about having three patients at UNMC, these folks don't have any insurance and they are holding the bag for the funding of those patients. Is there anything with HHS, Dr. Lurie, or CDC that can reimburse these facilities for the healthcare costs?
Mr. FRIEDEN. I believe that Secretary Burwell indicated in the hearing last week that we are very open to mechanisms that would make them whole for the expenses that they have had.
Mr. TERRY. Open to it and doing things—there is a big gap between those two. Is there any further discussions to reimbursing, Dr. Lurie?
Ms. LURIE. I think we understand that the cost of caring for these patients is quite substantial, and as Dr. Frieden said, Secretary Burwell indicated that she would look forward to working with Congress on this issue, yes.
I might also just add in terms of the emergency funding that is necessary, it is clear that hospitals that are going to take care of Ebola patients need additional training, and we very much appreciated the fact that University of Nebraska and Emory have been now working side by side often with the REP Teams to help with that. Part of our funding request would also establish something that would look like a national education and training center that would move to another level, I think, of preparedness for hospitals that really wanted to obtain that and to get help with doing that.
Mr. TERRY. OK, thank you very much.
My time has expired.
Mr. MURPHY. All right, that concludes the questions for this panel. We thank you. And also Members may have some other additional questions. I would appreciate your responsiveness to those. We do appreciate the availability of all of you in responding to us, so I thank you very much.
Mr. FRIEDEN. Thank you.

Mr. MURPHY. As this panel is moving, I will begin to introduce the second panel so we can move forward here. And I will introduce two of the panelists, then we will ask Mr. Terry to introduce one as well.

We will start off here—just a moment here. First, Mr. Ken Isaacs is the Vice President of Programs and Government Relations for Samaritan's Purse. Also Dr. David Lakey is the Commissioner of the Texas Department of State Health Services, but is here today testifying on behalf of the Association of State and Territorial Health Officials, correct?

Now, Mr. Terry, if you would like to introduce the other panelist.

Mr. TERRY. I would be honored to introduce Dr. Jeffrey Gold, the Chancellor of the University of Nebraska Medical Center and Nebraska Medicine. He is recent to Nebraska, but certainly making a huge impact, especially with the Biomedical Containment Center where they have hosted 3 Ebola patients, and they are setting the standards for how to treat the Ebola patients, and setting the standards for the employees that come in contact and work with those. UNMC is a great facility. They are very forward-thinking. They are ranked very high in a lot of areas of care, but it is probably the research that is making them known internationally, and so I am proud to introduce Dr. Jeffrey Gold.

Mr. MURPHY. Thank you. Well, for the panel, you are aware the committee is holding an investigative hearing, and when doing so, has had the practice of taking testimony under oath. Do any of you have any objections to taking testimony under oath? The Chair then advises you that under the rules of the House and the rules of the committee, you are entitled to be advised by counsel. Do any of you desire to be advised by counsel during your testimony today? And all the panelists have said no. In that case, would you please rise and raise your right hand, and I will swear you in.

[Witnesses sworn]

Mr. MURPHY. All have answered affirmatively. You are now under oath and subject to the penalties set forth in Title XVIII, section 1001 of the United States Code.

I am going to ask you each to give a 5-minute summary of your written statement, and we will begin with Mr. Isaacs.

STATEMENTS OF KEN ISAACS, VICE PRESIDENT, PROGRAMS AND GOVERNMENT RELATIONS, SAMARITAN'S PURSE; JEFF GOLD, CHANCELLOR, UNIVERSITY OF NEBRASKA MEDICAL CENTER; AND DAVID LAKEY, COMMISSIONER, TEXAS DEPARTMENT OF STATE HEALTH SERVICES, ON BEHALF OF THE ASSOCIATION OF STATE AND TERRITORIAL HEALTH OFFICIALS

STATEMENT OF KEN ISAACS

Mr. ISAACS. Thank you, Chairman Murphy, and esteemed members of the council and fellow guests of the committee for letting me testify today. It is a privilege to be before you regarding the developments of the Ebola outbreak in West Africa.

Since Ebola entered Liberia in March through its explosion into the international spotlight in July, and even now, when it appears that the disease may have crested in Liberia, the world has learned

much about Ebola, but I want to stress today that we have also discovered that there are many important questions that we simply do not know the answer to, and we need to know the answer to them.

I want to run through them quickly. I will say as an offside that going last means you have to reshuffle everything you are going to say because it has all been said before.

But I think that a good question to know the answer to is how are the doctors who are returning to America becoming infected. Some of those doctors have been our staff, some of those doctors have been our coworkers that were treated at Nebraska. And even recently, the gentleman in New York, they were all wearing level 4 gear. How did they get infected.

Can the virus live in other mammals besides primates, bats, rodents, and humans. Now, I have worked and lived in Africa for about 25 years, and I have eaten my share of bush meat. It is not always bats. It is mostly something like a groundhog. And so what does it mean, where does the virus live. And the point is that can it jump into the animal population here. We need to know that.

As with other viruses, is it possible that Ebola can be asymptomatic, sort of a Typhoid Mary kind of a thing. We know for a fact of three situations where blood was drawn on patients who were non-feeble, who were non-symptomatic, and they all three tested positive. One of the problems that exists today in Liberia where Samaritan's Purse is working is that there is no protocol to move blood from Liberia to Rocky Mountain Laboratory where these kind of tests would need to be checked and results found out.

You know, I will just say I am not trying to be a fear monger, but I think that there are things that we need to look at critically, and we should not be afraid to ask questions. In my written testimony, there is one paper from the New England Journal of Medicine that reports that 95 percent of the cases of Ebola incubate in 21 days. The inference is 5 percent don't incubate until 42 days. We need to know what that 5 percent means.

While the media coverage is already decreasing, and people maybe feel that Ebola has peaked, we do not think it has. I totally agree with Dr. Frieden. I think that we need to vigorously and in a sustained manner fight this disease in Africa. I think that no card can be taken off the table, and I think that while we hear from many health experts that we know how the disease is spread, we know how to fight it and we know how to stop it, the truth is that lessons come at a great and expensive and painful price, and when a new lesson comes about, then all of the policies are changed. So I heard the word humility used several times today by different Members of the panel, and I think that that is a good word because Ebola is a humbling disease.

When you talk to the epidemiologists, they are all over the place. CDC is saying 1½ million people by the middle of January, and the World Health Organization is saying that in December maybe 10,000 people a week. The point is we don't know.

Several things that I want to say right quick is we are seeing the disease go down in Liberia today as it regards the empty hospital beds, as it regards deaths, and as it regards patient loads, but at the same time, we are seeing a significant increase in Sierra Leone,

the country next to it, so it is clear that the disease has not peaked. Actually, if anything, I would say that it perhaps has ran its course, and we don't know what its course is. And if you look at the epidemiological charts in Sierra Leone, it has peaked two times before. So the question really is are we at a peak or are we in a trough before the next up rise?

Practically speaking, I think that a couple of things that we need to look at is a travel ban, travel restrictions, or I like to say travel management, should not be taken off the table. The real threat to the United States I do not feel is going to be how many people are sick here. The real threat to the United States is what will happen if the disease spreads into countries that cannot handle it. And I am not talking about Africa, I am talking about in a sub-Indian continent, I am talking about in India and China and Pakistan, Myanmar, Bangladesh, countries that are highly populated, that have low public health standards, and have low hygiene standards. You could see a death toll that would be unimaginable, and the impact around the globe would affect us as well.

So I think I am out of time there. Thank you.

[The prepared statement of Mr. Isaacs follows:]

Ken Isaacs
Vice President, Programs and Government Relations
Samaritan's Purse

Committee on Energy and Commerce
Subcommittee on Oversight and Investigations

Update on the U.S. Public Health Response to the Ebola Outbreak
November 17, 2014

Chairman Murphy, esteemed members of this council and fellow guests of the committee, it is a privilege to testify before you today regarding the developments of the Ebola outbreak in West Africa.

Since Ebola entered Liberia in March, through its explosion onto the international spotlight in July, and even now when it appears the disease may have crested in Liberia, the world has learned much about Ebola. We have also discovered there are important questions for which we simply do not have factual answers.

I believe it is important to highlight just a few questions that remain unanswered and therefore continue to pose significant risk to Americans and the world:

- How are the doctors who are returning to the USA becoming infected?
- Can the virus live in <u>other mammals</u> besides primates, bats, rodents, and humans? (Attachment 1) For example, could it live in dogs, cats, cows, swine, and groundhogs?
- As with other viruses, could Ebola continue to be carried by a human who has no fever but enough viral load to be contagious?

An article in *The New England Journal of Medicine* (Attachment 2) reports that 95% of Ebola cases fully incubate in less than 21 days, but 5% of cases can remain asymptomatic for up to 42 days (Attachment 3). What does that mean for the United States and the world?

The media coverage is already decreasing as if the disease itself is burning out. I hope it is, but we cannot assume that Ebola will now just go away because of the measures that have been implemented so far. The United States, and the international community, needs to relentlessly pursue all reasonable means to fight the spread of the virus in West Africa.

Many public health experts are telling us that we know the disease, how to fight it, and how to stop it. Everything we have seen in this current outbreak, however, suggests that we do not know the science of Ebola as well as we think we do.

No one can predict the path this virus will take or the number of innocent lives that will ultimately be lost. Estimates from the Centers for Disease Control (CDC) state that up to 1.5 million persons in West Africa will be infected by mid-January. The World Health Organization (WHO) recently announced that we will likely see 10,000 cases per week by early December. Every time proclamations are made based on the current understanding of the science, the agile virus surprises the best minds in the world and teaches us new things. Now the disease has entered Mali and it is likely to enter other countries that border Sierra Leone, Liberia, and Guinea. Samaritan's Purse is concerned that will happen soon.

I want to stress the strategic need to stop the disease in West Africa, and the United States government should base all of its policy decisions on stopping the disease there for the sake of the entire world. This must be our primary focus.

My organization, Samaritan's Purse, has had an office in Liberia for 11 years. When Ebola was first identified there in March of this year, we immediately mobilized a large-scale public awareness and infection prevention effort that is ongoing and has so far reached over one million people. Just two months later, we had assumed primary responsibility for all of the direct clinical care of Ebola patients in the country. In late July, one of our physicians, Dr. Kent Brantly, who has since testified before this committee, contracted the disease. The ensuing media frenzy upon his evacuation to the United States, then awoke the world to Ebola and its dangers.

From the beginning, we knew that we were dealing with an unprecedented Ebola outbreak. We were one of the first organizations to sound alarms while pleading with the international donors and the relief community for more resources. Our warnings were not heeded, and the struggling governments and crumbling healthcare systems in Liberia, Guinea, and Sierra Leone were left to manage a deadly epidemic that threatens the world. Over 5000 have since died and more lives are being lost every day.

Today, we are seeing what appears to be improvement in Liberia. Data reporting on the disease has been grossly inaccurate from the outset, yet there is a noteworthy trend as evidenced by fewer burials, a substantial number of empty clinic beds, and fewer cases found in some of the early hottest spots of the epidemic.

While this is positive news, I fear that some in the international community are already beginning to breathe a sigh of relief and pat themselves on the back. It is too early for that, as Ebola has repeatedly shown itself to be insidious, nimble, and deceptive.

At the same time as we see declines in patient loads and death rates in Liberia, there are significant increases in patient loads and deaths in the neighboring country of Sierra Leone. And in Liberia, there are numerous new outbreaks in remote rural communities, including in areas along the border with Cote d'Ivoire. Nearly every single district bordering Cote D'Ivoire has confirmed Ebola cases. Samaritan's Purse is deeply concerned the disease will soon appear there. The disease has also now been confirmed in Mali.

As an organization that has been on the frontlines of fighting the current outbreak, we have learned that there are things we know about Ebola, but many things we don't know. The disease has been underestimated from day one. Every time we learn something new, it comes at a terrible price, whether that is in Monrovia, Dallas, New York, or Spain. We must not assume that we have a complete grasp on its trajectory, in Liberia or anywhere else, and we should not be content to accept that our capabilities are fully sufficient.

We don't know exactly why the numbers have decreased in Liberia. The Ebola treatment unit for healthcare workers ordered by President Obama in mid-September was just opened last week, and it has not treated any patients as of the 15th of November. Only a small percentage of the new Ebola Treatment Units have been completed, and none of the 1,700 beds that were committed are open yet.

USAID and others have mobilized about 65 burial teams, and that has made real progress in removing infection sources as have public awareness campaigns and infection control programs. Liberians are now much more accepting of the knowledge that contact with corpses is deadly. Social change has also happened through public messaging and personal observation. These are all good things, but no one can state conclusively why the disease is decreasing in Liberia and increasing in Sierra Leone. It has descended in both countries before and then returned with intensity.

We should not be lulled into thinking that the fight is over or even has peaked. On the contrary, we must remain steadfastly committed to stopping the disease in Africa or seeing it turn into an even larger global crisis. Dr. Peter Piot, the man who co-discovered Ebola in 1976, recently said, "I am more worried about the many people from India who work in trade or industry in West Africa. It would only take one of them to become infected, travel to India to visit relatives during the virus' incubation period, and then, once he becomes sick, go to a public hospital there. Doctors and nurses in India, too, often don't wear protective gloves. They would immediately become infected and spread the virus." An article in the New York Times dated Sunday, November 16 reports on serious sanitation and hygiene issues in Mumbai (Attachment 4).

Is the world ready for the disease to hit the Indian subcontinent? What would it mean to see the virus spread in these densely populated countries where public health systems are wholly inadequate to contain the outbreak? If this seems like a far-fetched question, just think that between 1,500 and 3,000 people travel by air

from West Africa to India every week (Attachment 5). A single case in India similar to Mr. Duncan in Dallas would have a vastly different outcome.

The theoretical became a real possibility for me just last week. One of our Liberian team staff members, of Indian nationality, planned to take leave and return home to India for Christmas. This staff person has lived in a "no touch" environment for over two months and serves in a zero-risk position. Yet, I was faced with the decision of whether to send him home with the protocols of WHO and CDC, which are essentially to monitor your temperature twice daily and report to a hospital if your fever spikes or you have other symptoms of Ebola. For the sake of public health we decided not to allow immediate return to India but to isolate the person for 21 days first. Despite scientific claims, the consequences of being wrong are unimaginable.

There has been much discussion about restricting travel from West Africa. Two American allies, Canada and Australia, have essentially closed their borders to non-resident travelers from Sierra Leone, Liberia, and Guinea. Prohibitions or severe restrictions from about two-dozen other countries have hurt the ability to travel commercially in and out of the three countries. There is no cohesive global policy however just like there is no unified protocol within the US for returning relief workers or members of the US military.

We need to seriously consider whether travel restrictions could stop or slow the spread of the disease to America, or more significantly, other parts of the globe. Our health system has shown that, although with pain, panic and great expense, we

are able to trace contacts and quickly shut down the spread of the virus. Would India, Bangladesh, or China have the same capacity?

We must do more than just screen departing passengers for fever. We have to be willing to consider implementing a policy of "essential" travel only that would be coordinated internationally. Those who argue that it will bring these countries to financial ruin perhaps fail to recognize that these nations have already suffered enormous economic pain because of the outbreak. The internationally accepted premise of fighting Ebola is to identify and isolate. Why would we not include air travel in that discussion?

Commercial airlines have already severely cut back and restricted their flights. British Air, Air France, Delta, Kenya Air and others have ceased flights in and out of these countries. Today in Liberia there are only two commercial carriers left flying, Brussels Air and Royal Air Maroc. Each makes two flights per week into Monrovia. It can take up to two weeks to get a booking out. The flight crews have come under pressure from their unions to stops flying there. If the companies should decide it is not in their commercial interest to continue these flights, Liberia will be effectively quarantined.

If the commercial flights come to a halt, what is the back-up plan? How would the relief effort continue to be supported with personnel and supplies? Given the recent international track record in timeliness, would we be looking at four or six or eight weeks to get an air bridge set up to fly relief workers and emergency cargo? Instead, a trustworthy system dedicated to flying solely for the Ebola response should be established now.

We often hear that the 21-day isolation will hamper efforts to recruit staff to join the fight against Ebola. It would be much more of an onerous challenge to convince personnel to go if they did not have assurance of their flight home. A dedicated air bridge for humanitarian workers would also provide the ability to fully monitor and land a large group if needed in case of crisis.

Strong diplomatic pressure must be continued on the governments in Guinea, Liberia, and Sierra Leone to put aside their local politics and engage in this fight in a more serious way. As we struggle to work in Liberia, we see government bureaucracy hampering efforts. In one area, we finished construction on a new Community Care Center two weeks ago, but we are still waiting for the government to inspect it so that it can care for the Ebola patients around it. Liberia removed their emergency decree last week and announced their desire to reopen schools soon. We hope those measures are timely and not premature.

I want to emphasize the incredible need for a vaccine and effective treatments. This cannot be overstated. Finding an effective vaccine is in the interest of the United States and the entire world.

We should be asking ourselves if we are truly seeing a turn in the tide or merely the calm before the storm. This disease is a formidable enemy, and it has already caught us off-guard more than once. Its patterns of transmission are not fully understood and have not been fully controlled. We should not take the chance of having our response come up short again. The stakes are too high. If we let our guard down now, the consequences could be much more catastrophic than what we have already seen.

Ken Isaacs
Vice President, Programs and Government Relations
Samaritan's Purse

Committee on Energy and Commerce
Subcommittee on Oversight and Investigations

Update on the U.S. Public Health Response to the Ebola Outbreak
November 17, 2014

Attachment 1

SCIENTIFIC REPORTS

OPEN

Transmission of Ebola virus from pigs to non-human primates

SUBJECT AREAS:
VIROLOGY
PATHOGENS
PATHOLOGY
EXPERIMENTAL ORGANISMS

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Ebola viruses (EBOV) cause often fatal hemorrhagic fever in several species of simian primates including human. While fruit bats are considered natural reservoir, involvement of other species in EBOV transmission is unclear. In 2009, Reston-EBOV was the first EBOV detected in swine with indicated transmission to humans. In-contact transmission of Zaire-EBOV (ZEBOV) between pigs was demonstrated experimentally. Here we show ZEBOV transmission from pigs to cynomolgus macaques without direct contact. Interestingly, transmission between macaques in similar housing conditions was never observed. Piglets inoculated oro-nasally with ZEBOV were transferred to the room housing macaques in an open inaccessible cage system. All macaques became infected. Infectious virus was detected in oro-nasal swabs of piglets, and in blood, swabs, and tissues of macaques. This is the first report of experimental interspecies virus transmission, with the macaques also used as a human surrogate. Our finding may influence prevention and control measures during EBOV outbreaks.

Ebola viruses belong to the family *Filoviridae*, genus *Ebolavirus*. Those endemic to Africa cause severe hemorrhagic fever with frequent fatal outcome in humans, great apes and several species of non-human primates (NHPs). Fruit bats are considered to be the natural reservoir for EBOV in Africa[1]. In 2009, the only non-African known species of EBOV, Reston Ebola virus (REBOV), was isolated from swine in Philippines, with antibodies against the virus detected in pig farmers[2,3]. However REBOV did not cause clinical signs in experimentally inoculated pigs[4]. In contrast to African species of EBOV, REBOV does not cause clinical symptoms in humans, although the infection may be fatal in cynomolgus macaques[5]. We have previously demonstrated that Zaire-EBOV (ZEBOV) can infect pigs, cause disease, and transmit to in-contact pigs[6]. While primates develop systemic infection associated with immune dysregulation resulting in severe hemorrhagic fever, the EBOV infection in swine affects mainly respiratory tract, implicating a potential for airborne transmission of ZEBOV[7,8]. Contact exposure is considered to be the most important route of infection with EBOV in primates[7], although there are reports suggesting or suspecting aerosol transmission of EBOV from NHP to NHP[9–10], or in humans based on epidemiological observations[11]. The present study was design to evaluate EBOV transmission from experimentally infected piglets to NHPs without direct contact.

Results

Six four-week old Landrace piglets (*Sus scrofa*) were oronasally inoculated with 10^6 $TCID_{50}$ of ZEBOV (Kikwit 95) per animal. The piglets were transferred to a separate room for the inoculations, and then moved back into the room containing four cynomolgus macaques. This age group was selected based on the previous observation of differences in severity of the disease in ZEBOV inoculated piglets[6] to ensure sufficient survival time of the piglets potentially needed for virus transmission, and to determine whether piglets without an overt clinical disease could transmit the virus. The macaques were housed in two levels of individual cages inside the pig pen, and separated from the piglets by wire barrier placed about 20 cm in front of the bottom cages to prevent direct contact between the two species. Bottom cages housing NHPs Nos. 07M and 20F were about 10 cm above the ground, top cages housing NHPs Nos. 34F and 51M were about 1.4 m above the ground. The NHP cages were located immediately to the side of the air exhaust system. The cubicle layout respective to the airflow (ten complete air exchanges per hour) in the room is schematically indicated in Supplemental Figure S1. During the husbandry, piglets were moved away from the cages and enclosed by the gate system. The floor was washed, taking care that the water is sprayed at low pressure and away from the NHP cages, to avoid any splashes into the bottom cages. Also the

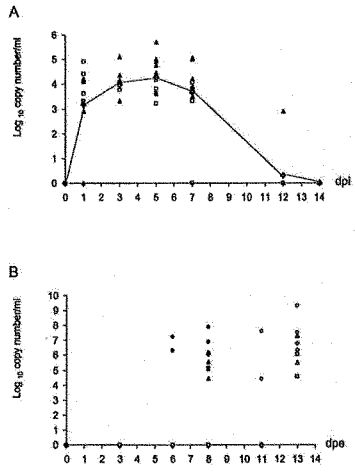

Figure 1 | Detection of EBOV RNA in swabs and blood. (A) Shedding in pigs. Squares represent the oral swabs and triangles illustrate the nasal swabs. Gray line with diamonds shows the general trend of the oro-nasal shedding. (B) Non-human primates: square markers represent the oral swabs, diamonds represent the rectal swabs, triangles represent the nasal swabs, circles represent blood samples. Gray markers-NHP No. 51M and 20F, black markers-NHP 07M and 34F. "dpi" (days post inoculation) and "dpe" (days post exposure) on the X axis are equivalent.

20 cm space between the wire barrier and the cages was cleaned separately with running water prior to proceeding with NHP cage cleaning. Both animal species were fed after the cleaning, providing new clean dishes for the macaques, with staff changing disposable outer gloves between procedures and animals. The design and size of the animal cubicle did not allow to distinguish whether the transmission was by aerosol, small or large droplets in the air, or droplets created during floor cleaning which landed inside the NHP cages (fomites). The husbandry flow during the sampling days was: cleaning, followed by sampling, then feeding, with staff changing disposable outer gloves between procedures and animals. Pigs and NHPs were sampled on alternative days except for day 3 post infection, when NHPs were sampled in the morning and the piglets in the afternoon.

Clinical signs and gross pathology in swine, following the inoculation with EBOV, were comparable to previous infection study in piglets of this age group[6]. Increase in respiratory rate (up to 80 breaths/min) and in rectal temperatures (40.2–40.5°C) was observed between 5 and 7 days post infection (dpi). All piglets apparently recovered from the disease by 9 dpi. Piglets Nos. 1, 2 and 4 were euthanized at 12 dpi, and piglets Nos. 3, 5 and 6 at 14 dpi, based on experimental schedule. Clinical scores and parameters are provided in the Supplementary Information (Supplemental Figure 2A, Supplemental Table 1). No significant lesions were observed at the necropsy. Microscopic lung lesions were focal and not extensive,

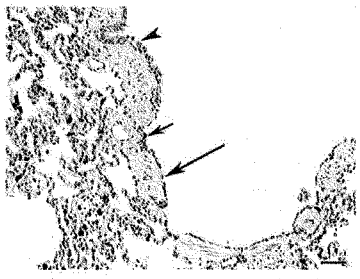

Figure 2 | Lungs, macaque No.34F. Segmental attenuation and loss of respiratory epithelium in the bronchiolar wall (large arrow) with some areas of the lungs relatively unaffected (arrowhead). Immunostaining for Ebola virus antigen was detected in occasional respiratory epithelial cells (small arrow) as well as within alveolar and septal macrophages. Bar=50 μm.

characterized by broncho-interstitial pneumonia with a lobular pattern, similar to those described in our previous report[6]. Virus antigen was detected by immunohistochemistry in three piglets (No. 2, 4, and week signal in No. 5), primarily within the areas of necrosis often adjacent to bronchioles (Supplemental Figure S3A). The presence of virus in the lung was confirmed by detection of EBOV RNA employing real-time RT-PCR targeting the L gene, and by virus isolation on Vero E6 cells for piglet No. 2 and No. 4. Virus isolation was also attempted from lung associated lymph nodes, based on detection of viral RNA, yielding one, successful isolation. Viral RNA was detected in submandibular lymph nodes of all piglets, and in the spleen and liver of two piglets. Low level of viremia based on RNA levels was detected in blood of four piglets at 5 and 7 dpi. EBOV RNA was detected in nasal and oral swabs of piglets from 1 dpi until 7 dpi, inclusively (Figure 1A), and from rectal swabs on day 1 and 5, but not at 3, 7 and 12 dpi (Supplemental Table 1). Viral isolation was attempted on all swabs. Out of 45 oral and nasal swabs positive by RT-PCR, 16 were positive on virus isolation, while two out of 11 RNA-positive rectal swabs tested positive for virus. Presence of EBOV RNA in cell culture supernatants from the isolates with observed CPE was confirmed by real time RT-PCR (Supplemental Table 1; Supplemental Table 2).

Air sampling was conducted on day 0, 3, 6, 8 and 11 post inoculation. Real time RT-PCR targeting the L gene detected viral RNA on days 6 and 8 post inoculation. Location in front of the bottom cages at about 75 cm above the floor was sampled in 30 min triplicates following husbandry, during the NHP sampling. Average values of 4.4 $\log_{10}$ copies/ml and 3.85 $\log_{10}$ copies/ml of the sampling buffer were detected at 6 and 8 dpi, respectively. Virus isolations were not successful, likely due to the sampling buffer composition (0.1% Tween 20).

All four NHPs (*Macaca fascularis*) were alert and in good apparent health until 7 days post exposure (dpe - corresponding to dpi of piglets) with ZEBOV. At 8 dpe, macaques 07M (bottom left cage) and 34F (upper right cage), housed in cages located within an air flow towards the exhaust system, were euthanized based on clinical signs typical for EBOV infection in NHPs. Both had petechial hemorrhages on the skin of the chest and along internal surfaces of the arms and legs. Macaques 51M and 20F were visually healthy until 12 dpe, when early clinical signs were noted, and both animals were

euthanized the next day (13 dpe). The NHPs were euthanized when convincing clinical signs typical for EBOV infection became apparent, preferably prior to the humane endpoint (Supplemental Figure S2B; Supplemental Table 1). Examination of internal organs at the necropsy exposed damages mainly to the lung (Supplemental Figure S4) and liver. Microscopic lesions and antigen distribution in the organs were similar to previous reports[12–14], except for the lesions and antigen distribution in lungs. Interstitial pneumonia was characterized by thickened and hypercellular alveolar septa due to infiltration by primarily macrophages (Supplemental Fig. 3B), with multifocal areas of alveolar hemorrhage and edema. EBOV antigen was detected extensively in alveolar and septal macrophages using double immunostaining (Supplemental Fig. 3C), as well as within pneumocytes and endothelial cells. Viral antigen was also observed within bronchiolar epithelial cells with adjacent segmental loss of epithelial cells (Figure 2.) and within respiratory epithelial cells of the trachea. The pattern of lesions and immunostaining for EBOV antigen in lungs suggests infection of the lungs both, via respiratory epithelium and due to viremic spread of the virus.

There was a remarkable difference in the type and quantity of cells infiltrating the lungs between the macaques and the pigs, although viral antigen was detected only in alveolar macrophages of both species. Monocytes/macrophages were essentially the only leukocyte type infiltrating the lungs in non-human primates, while large quantities of non-infected lymphocytes were recruited into the pig lungs. This phenomenon can be linked to different clinical picture in the two animal species: respiratory distress in pigs (severe in a specific age group[6]) versus systemic disease with no major respiratory signs in NHPs. It will be important to identify differences and similarities in ZEBOV-induced pathogenesis and pathology between the two species in future studies.

Infection of the NHPs with ZEBOV was confirmed by detection of viral RNA (real time RT-PCR targeting the L gene), and in all samples collected at euthanasia by virus isolation. The first detection of ZEBOV RNA was in the blood of NHPs 34F and 07M at 6 dpe, with virus isolation from macaque 07M. This was followed by ZEBOV RNA detection in nasal, oral and rectal swabs from the same NHPs at 8 dpe (Figure 1B). A similar pattern was observed for macaques 51M and 20F, starting at 11 dpe with detection of RNA in blood and virus isolation from animal 20F, followed by RNA and virus detection in swabs at 13 dpi. Detection of viral RNA and infectious virus in blood, swabs and tissues of the macaques (summarized in Supplemental Table 4) confirmed systemic spread of the virus. Whole genome sequencing performed on virus nucleic acid from selected swab and lung samples from pigs and NHPs confirmed identity of the virus.

Discussion

Pigs were the source of ZEBOV at a time of infection of NHPs euthanized at 8 dpe (07M and 34F) since shedding from the macaques was not detected at dpe 3 or 6. NHPs euthanized at 13 dpe (20F, 51M) could have contracted ZEBOV from the environment contaminated by either species, considering previous reports on development of disease following aerosol exposure[10], or other inoculation routes[3,13,16], although pigs can generate infectious short range large aerosol droplets more efficiently then other species[17]. We have also never observed transmission of EBOV from infected to naive macaques, including in an experiment employing the same cage setting as in the current study, where three NHPs intramuscularly inoculated with EBOV did not transmit the virus to one naive NHP for 28 days, the duration of the protocol. During another study, three EBOV infected NHPs cohabiting with 10 naive NHPs in adjacent cage systems did not transmit the virus to naive animals for 28 days (unpublished data). The exact route of infection of the NHPs is impossible to discern with certitude because they were euthanized at a time when EBOV had already spread systemically. However, the segmental attenuation and loss of bronchiolar epithelium and the presence of Ebola virus antigen in some of the respiratory epithelial cells in the lungs of all macaques suggest that the airways were one of the routes involved in the acquisition of infection, consistent with previous reports[9,10]. Other routes of inoculation generally did not lead to lesions in the respiratory tract comparable to those observed in this study[12,13].

Under conditions of the current study, transmission of ZEBOV could have occurred either by inhalation (of aerosol or larger droplets), and/or droplet inoculation of eyes and mucosal surfaces and/or by fomites due to droplets generated during the cleaning of the room. Infection of all four macaques in an environment, preventing direct contact between the two species and between the macaques themselves, supports the concept of airborne transmission.

It is of interest, that the first macaques to become infected were housed in cages located directly within the main airflow to the air exhaust system. The experimental setting of the present study could not quantify the relative contribution of aerosol, small and large droplets in the air, and droplets landing inside the NHP cages (fomites) to EBOV transmission between pigs and macaques. These parameters will need to be investigated using an experimental approach specifically designed to address this question.

The present study provides evidence that infected pigs can efficiently transmit ZEBOV to NHPs in conditions resembling farm setting. Our findings support the hypothesis that airborne transmission may contribute to ZEBOV spread, specifically from pigs to primates, and may need to be considered in assessing transmission from animals to humans in general. The present experimental findings would explain REBOV seropositivity of pig farmers in Philippines[2,3] that were not involved in slaughtering or had no known contact with contaminated pig tissues. The results of this study also raise a possibility that wild or domestic pigs may be a natural (non-reservoir) host for EBOV participating in the EBOV transmission to other species in sub-Saharan Africa.

Methods

Virus. ZEBOV strain Kikwit 95 was produced on VERO E6 cells in minimal essential medium (MEM) supplemented with 2% fetal bovine serum and antibiotics (Penicillin/Streptomycin). Virus titers were determined by standard $TCID_{50}$ and/or immunoplaque assays on VERO E6 cells. Procedures for the production and propagation of ZEBOV and all subsequent experiments involving infectious materials were performed in the Containment Level (CL) 4 facilities of the Canadian Science Center for Human and Animal Health (CSCHAH).

Animal experiments. Four cynomolgus macaques were acclimatized in the BSL4 animal facility for two weeks, and housed in the same room for one week prior to the swine inoculation. The macaques were housed in two levels of individual cages inside the pig pen, and separated from the piglets by wire barrier placed about 15 cm in front of the cages to prevent direct contact between the two species. Bottom cages housing NHPs Nos. 07M and 20F were about 20cm above the ground, while top cages housing NHPs Nos. 34F and 51M were about 1.4 m above the ground. The NHP were sampled at 3 and 6 dpi (nasal, oral rectal swabs, blood) as per experimental schedule. Two macaques were euthanized for humane reasons at 8 days post exposure (dpe), and all animals were sampled at that time. Two remaining NHPs were in addition sampled at 11 dpe, and at 13 dpe when they were euthanized. The animals were euthanized when typical clinical signs of Ebola infection became apparent, if possible prior to reaching the humane endpoint. Lung, lung associated lymph nodes, liver, spleen and intestine were collected at the necropsy.

Pigs (breed Landrace) were obtained from a high health status herd operated by a recognized commercial supplier in Manitoba, Canada. Three-week-old piglets, designated as animal No. 1–6, were acclimatized for seven days prior to the inoculation in an animal cubicle already housing the non-human primates. The six piglets were inoculated oro-nasally with 2 ml of 10^6 $TCID_{50}$ total per animal (0.5 ml per each nostril and 1 ml orally) in a room adjacent to the BSL4 animal cubicle and subsequently housed in proximity to cages with four non-human primates (NHP). Swine rectal temperatures were taken during the sampling performed under anesthesia on days 0, 1, 3, 5, 7, 12 and 14, when blood and rectal, oral and nasal swabs were collected. Three piglets were euthanized on day 12 post inoculation (no. 1M, 2M, 4F), and three on day 14 (3M, 5F, 6F), as per experimental schedule. Muscle, lung, liver, spleen, trachea, and submandibular, lung associated and mesenteric lymph nodes were collected at necropsy.

All animal manipulations were performed under CL4 conditions and followed Animal Use Document No. CSCHAH AUD# C-11-004 approved by the Animal Care

Committee of the Canadian Science Centre for Human and Animal Health, according to and following the guidelines of the Canadian Council on Animal Care.

Virus isolation. Swabs collected into 1 ml of cMEM, blood, and tissues homogenized in MEM using a bead mill homogenizer according to the manufacturer's protocol (Tissue Lyser, Qiagen) were used for virus isolation and real time RT-PCR analysis. All NHP samples and swine rectal swabs were plated in 10-fold serial dilutions of supernatant on Vero E6 cells with six replicates per dilution. At 72–96 h post-infection the plates were scored for cytopathic effect (CPE) and $TCID_{50}$ virus titers were calculated using the Reed and Muench method. Swine rectal swabs had to be however carried over onto replica plates for three passages prior to reading the CPE. Swine nasal and oral swabs, blood and tissues were first analyzed by real time RT-PCR targeting the ZEBOV L gene, followed by virus isolation on Vero E6 cells in P6 plates on selected samples.

Virus RNA detection. NHP samples: Total RNA was isolated from tissues preserved and homogenized in RNA later employing the RNeasy Mini Kit (QIAGEN). RNA from nasal washes and swabs was isolated using the QIAamp Viral RNA Mini Kit (QIAGEN, GmbH).

Swine samples: RNA was isolated using Tripure Reagent (Roche Applied Science) according to the manufacturer's recommendations from swabs, blood or 10% w/v tissue homogenates in cMEM. One-Step real-time RT-PCR was carried out using following primers and probe:

ZebovForward -CAGCCAGCAATTTCTTCCAT;
ZebovReverse- TTTCGGTTGCTGTTTCTGTG;
ZebovProbe FAM-ATGATTGGCGTACTGGAGGAGCAG-NFQ.

Armoured enterovirus RNA (Asuragen) was used as external extraction/reaction control. Quantitect Reverse Transcriptase Real-time PCR kit (Qiagen) was employed for the PCR reactions according to the manufacturer's specifications. Reaction conditions for the RT-PCR were as follows: 50°C for 30 minutes; 95°C for 15 minutes; 45 cycles of 95°C for 15 seconds followed by 60°C for 45 seconds. The samples were run on the Rotor-Gene 6000 (Qiagen) or on the the LightCycler 480 (Roche Applied Science). Copy numbers were determined based on the L-gene Ebola plasmid standard control curve. Cut off value for samples to be considered positive were 3 log_{10} copies/ml (Rotorgene) or 3.15 log_{10} copies/ml (LightCycler 480).

Air sampling. The air was sampled using BioCapture 650 Air Sampler (FLIR, Arlington, VA) on days 0, 3, 6, 8 and 11 post inoculation of the piglets. The air sampling started after husbandry, concurrent to NHP sampling, later in the morning before noon. Location in front of the bottom cages at about 75 cm above the floor was sampled in 30 min triplicates. The collection took place over a span of about two hours in total (three 30 min collection times with changes of cartridges in between). The air sampler device collects particles by bubbling the air through a pre-loaded buffer (0.74% Tris/0.1 Tween 20) provided in a sealed cartridge by the manufacturer. This solution is not optimal for recovery of live enveloped viruses, and virus isolation attempts were unsuccessful. ZEBOV RNA was detected by real time RT-PCR targeting the L gene.

EBOV sequencing. Viral RNA previously extracted for real time PCR was sequenced by first generating cDNA with the use of Omniscript reverse transcriptase (Qiagen) and random hexamers along with specific EBOV primers followed by PCR with iProof high fidelity DNA polymerase (Bio-Rad) with specific primers (available upon request). DNA sequencing was carried out using the 3730xl DNA Analyzer (ABI).

Histology and immunohistochemistry. Tissues were fixed in 10% neutral phosphate buffered formalin, paraffin embedded using standard procedures, sectioned at 5 m, and stained with hematoxylin and eosin (HE) for histopathologic examination. Detection of viral antigen was performed using A 1:2000 dilution of rabbit polyclonal anti-ZEBOV VP40 antibody as described previously[9]. Identification of macrophages in the lungs was performed by immunostaining for the macrophage/monocyte marker L1 using Clone Mac387 (Dako, USA) primary antibodies. The tissue sections were quenched for 10 minutes in aqueous 3% hydrogen peroxide, prior to retrieval of epitopes using high pH AR10 (BioGenex, CA) in a BioCare Medical Decloaking Chamber. Antibody Clone Mac 387 was applied for 10 minutes at a dilution of 1:3200, and visualized using an AP-polymer kit, Mach 4 Universal (BioCare Medical, CA) for 30 minutes, and reacted with Vulcan Fast Red (BioCare Medical, CA) substrate. For the Mac387/Ebola double stain, antibody Clone Mac 387 was applied for 10 minutes at a dilution of 1:3200, and visualized using a multilink horseradish peroxidase labeled kit, Super Sensitive Link-Label IHC Detection System (BioGenex, CA), reacted with the chromogen diaminobenzidine (DAB). The sections were then incubated with a denaturing solution (1 part A, 3 parts B, BioCare Medical, CA) for 5 minutes, pretreated with proteinase K enzyme for 10 minutes, and rabit polyclonal anti-Ebola Zaire VP40 antibody was applied to the sections at a 1:2,000 dilution for one hour. The anti-EBOV antibody was visualized using an AP-polymer kit, Mach 4 Universal (BioCare Medical, CA) for 30 minutes and reacted with Vulcan Fast Red (BioCare Medical, CA) substrate. All sections are counterstained with Gill's hematoxylin.

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Author contributions

H.M.W. and C.K. conceived the study, design experiments, performed the animal experiments, analyzed and interpreted data, and wrote the manuscript. C.E-H. provided analysis of histopathology and data interpretation; A.L., G.S. and C.N. performed *in vitro* experiments and analyzed related data.

Additional information

Supplementary information accompanies this paper at http://www.nature.com/scientificreports

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Vice President, Programs and Government Relations
Samaritan's Purse

Committee on Energy and Commerce
Subcommittee on Oversight and Investigations

Update on the U.S. Public Health Response to the Ebola Outbreak
November 17, 2014

Attachment 2

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Ebola Virus Disease in West Africa — The First 9 Months of the Epidemic and Forward Projections

WHO Ebola Response Team*

ABSTRACT

BACKGROUND

On March 23, 2014, the World Health Organization (WHO) was notified of an outbreak of Ebola virus disease (EVD) in Guinea. On August 8, the WHO declared the epidemic to be a "public health emergency of international concern."

METHODS

By September 14, 2014, a total of 4507 probable and confirmed cases, including 2296 deaths from EVD (Zaire species) had been reported from five countries in West Africa — Guinea, Liberia, Nigeria, Senegal, and Sierra Leone. We analyzed a detailed subset of data on 3343 confirmed and 667 probable Ebola cases collected in Guinea, Liberia, Nigeria, and Sierra Leone as of September 14.

RESULTS

The majority of patients are 15 to 44 years of age (49.9% male), and we estimate that the case fatality rate is 70.8% (95% confidence interval [CI], 69 to 73) among persons with known clinical outcome of infection. The course of infection, including signs and symptoms, incubation period (11.4 days), and serial interval (15.3 days), is similar to that reported in previous outbreaks of EVD. On the basis of the initial periods of exponential growth, the estimated basic reproduction numbers (R_0) are 1.71 (95% CI, 1.44 to 2.01) for Guinea, 1.83 (95% CI, 1.72 to 1.94) for Liberia, and 2.02 (95% CI, 1.79 to 2.26) for Sierra Leone. The estimated current reproduction numbers (R) are 1.81 (95% CI, 1.60 to 2.03) for Guinea, 1.51 (95% CI, 1.41 to 1.60) for Liberia, and 1.38 (95% CI, 1.27 to 1.51) for Sierra Leone; the corresponding doubling times are 15.7 days (95% CI, 12.9 to 20.3) for Guinea, 23.6 days (95% CI, 20.2 to 28.2) for Liberia, and 30.2 days (95% CI, 23.6 to 42.3) for Sierra Leone. Assuming no change in the control measures for this epidemic, by November 2, 2014, the cumulative reported numbers of confirmed and probable cases are predicted to be 5740 in Guinea, 9890 in Liberia, and 5000 in Sierra Leone, exceeding 20,000 in total.

CONCLUSIONS

These data indicate that without drastic improvements in control measures, the numbers of cases of and deaths from EVD are expected to continue increasing from hundreds to thousands per week in the coming months.

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As of September 14, 2014, a total of 4507 confirmed and probable cases of Ebola virus disease (EVD), as well as 2296 deaths from the virus, had been reported from five countries in West Africa — Guinea, Liberia, Nigeria, Senegal, and Sierra Leone. In terms of reported morbidity and mortality, the current epidemic of EVD is far larger than all previous epidemics combined. The true numbers of cases and deaths are certainly higher. There are numerous reports of symptomatic persons evading diagnosis and treatment, of laboratory diagnoses that have not been included in national databases, and of persons with suspected EVD who were buried without a diagnosis having been made.[1]

The epidemic began in Guinea during December 2013,[2] and the World Health Organization (WHO) was officially notified of the rapidly evolving EVD outbreak on March 23, 2014. On August 8, the WHO declared the epidemic to be a "public health emergency of international concern."[3] By mid-September, 9 months after the first case occurred, the numbers of reported cases and deaths were still growing from week to week despite multinational and multisectoral efforts to control the spread of infection.[1] The epidemic has now become so large that the three most-affected countries — Guinea, Liberia, and Sierra Leone — face enormous challenges in implementing control measures at the scale required to stop transmission and to provide clinical care for all persons with EVD.

Because Ebola virus is spread mainly through contact with the body fluids of symptomatic patients, transmission can be stopped by a combination of early diagnosis, contact tracing, patient isolation and care, infection control, and safe burial.[1] Before the current epidemic in West Africa, outbreaks of EVD in central Africa had been limited in size and geographic spread, typically affecting one to a few hundred persons, mostly in remote forested areas.[4] The largest previous outbreak occurred in the districts of Gulu, Masindi, and Mbarara in Uganda.[5] This outbreak, which generated 425 cases over the course of 3 months from October 2000 to January 2001,[6] was controlled by rigorous application of interventions to minimize further transmission — delivered through the local health care system, with support from international partners.[5,7,8]

We now report on the clinical and epidemiologic characteristics of the epidemic in Guinea, Liberia, Nigeria, and Sierra Leone during the first 9 months of the epidemic (as of September, 14, Senegal had reported only a single case). We document trends in the epidemic thus far and project expected case numbers for the coming weeks if control measures are not enhanced.

METHODS

SURVEILLANCE

Full details of the methods, along with sensitivity and uncertainty analyses, are provided in Supplementary Appendix 1, available with the full text of this article at NEJM.org; a summary is provided here. Case definitions for EVD have been reported previously by the WHO.[9] In brief, a suspected case is illness in any person, alive or dead, who has (or had) sudden onset of high fever and had contact with a person with a suspected, probable, or confirmed Ebola case or with a dead or sick animal; any person with sudden onset of high fever and at least three of the following symptoms: headache, vomiting, anorexia or loss of appetite, diarrhea, lethargy, stomach pain, aching muscles or joints, difficulty swallowing, breathing difficulties, or hiccupping; or any person who had unexplained bleeding or who died suddenly from an unexplained cause. A probable case is illness in any person suspected to have EVD who was evaluated by a clinician or any person who died from suspected Ebola and had an epidemiologic link to a person with a confirmed case but was not tested and did not have laboratory confirmation of the disease. A probable or suspected case was classified as confirmed when a sample from the person was positive for Ebola virus in laboratory testing.

Clinical and demographic data were collected with the use of a standard case investigation form (see Supplementary Appendix 1) on confirmed, probable, and suspected EVD cases identified through clinical care, including hospitalization, and through contact tracing in Guinea, Liberia, Nigeria, and Sierra Leone. To create the fullest possible picture of the unfolding epidemic, these data were supplemented by information collected in informal case reports, by data from diagnostic laboratories, and from burial records. The data recorded for each case included the district of residence, the district in which the disease was reported, the patient's age, sex, and signs

and symptoms, the date of symptom onset and of case detection, the name of the hospital, the date of hospitalization, and the date of death or discharge. A subgroup of case patients provided information on potentially infectious contacts with other persons who had Ebola virus disease, including possible exposure at funerals. We present here the results from analyses of detailed data on individual confirmed and probable cases recorded by each country in databases provided to the WHO as of September 14, 2014; analyses of confirmed and probable cases, together with suspected cases, are provided in Supplementary Appendix 1.

ETHICAL CONSIDERATIONS

This study is based on data collected during surveillance and response activities for EVD in Guinea, Liberia, Nigeria, and Sierra Leone. All information on individual patients has been anonymized for presentation.

CLINICAL MANIFESTATIONS AND CASE FATALITY RATE

We report on the frequency of symptoms in patients with confirmed and probable EVD cases overall and by country. We evaluated potential risk factors for a fatal outcome, including sex, age group (<15 years, 15 to 44 years, and ≥45 years), general and hemorrhagic symptoms, and occupation (whether the patient was or was not a health care worker). We performed the analysis using logistic-regression models, with data on patients for whom there was a definitive outcome (death or recovery) by August 17, 2014.

The case fatality rate was calculated as the percentage of fatal EVD cases among reported cases with a known definitive clinical outcome (see Supplementary Appendix 1). For comparison, we also calculated a case fatality rate that was based only on the ratio of reported deaths to reported cases, including in the denominator cases for which the clinical outcome is unknown.

KEY TIME PERIODS

We investigated five key time periods that characterize the progression of infection, the detection, care, and recovery or death of a person with Ebola virus disease, and the transmission of infection: the incubation period, which is the time between infection and the onset of symptoms (information that is relevant for assessing the length of time that case contacts have to be followed up); the interval from symptom onset to hospitalization (which is indicative of the infectious period in the community); the interval from hospital admission to death and the interval from hospital admission to discharge (both of which are relevant to assessing the demand for beds in relation to hospital capacity); the serial interval, which is defined as the interval between disease onset in an index case patient and disease onset in a person infected by that index case patient; and the generation time, which is the time between infection in an index case patient and infection in a patient infected by that index case patient (required to estimate the reproduction number, or R, of the epidemic).

The incubation period was estimated retrospectively (by having patients with confirmed cases recall the likely source of infection), with a distinction made between persons with single exposures and those with multiple exposures. In the case of multiple exposures, all the times of exposure were used to fit a parametric distribution (see Supplementary Appendix 1 for a sensitivity analysis). The interval from symptom onset to hospitalization is summarized as the mean, rather than the median, number of days to reflect the average person-days of infectiousness in the community. The mean duration of hospitalization was estimated as the average number of days from hospitalization to discharge and the average number of days from hospitalization to death, weighted by the proportion of patients who died. For each statistic we calculated the mean, median, and interquartile range and fitted a gamma probability distribution to model the variation among persons (see the results in Supplementary Appendix 1). Separate estimates were obtained for health care workers and for all other adults. The serial interval was estimated from a subgroup of patients for whom information was available on the time of symptom onset in known or suspected chains of transmission. For EVD, we expect the generation time distribution to be nearly identical to the serial interval distribution (result derived in Supplementary Appendix 1).

QUANTIFICATION OF THE SPREAD OF INFECTION AND PROJECTION OF FUTURE CASES

The basic reproduction number (R_0) is the average number of secondary cases that arise when one primary case is introduced into an uninfect-

ed population. These secondary cases arise after a period measured by the serial interval or by the generation time. When R_0 is greater than 1, infection may spread in the population, and the rate of spread is higher with increasingly high values of R_0. The doubling time (the time required for the incidence to double) was estimated on the basis of the reproduction number and the serial interval.[11] After the early phase of exponential growth in case numbers, once infection has become established, the number of people still at risk declines, so the reproduction number falls from its maximum value of R_0 to a smaller, net reproduction number, R_t. When R_t falls below 1, infection cannot be sustained. Estimates of R_0 and R_t help in evaluating the magnitude of the effort required to control the disease, the way in which transmission rates have fluctuated through time, and the effectiveness of control measures as they are implemented.

We estimated R_t over time from the time series of incidence of cases (i.e., a plot of the number of new cases per week over the course of the epidemic) and from our estimate of the serial interval distribution.[12] We then estimated R_0 for the early stages of the epidemic, when transmission rates were at their highest, on the basis of the date of symptom onset. As described in Supplementary Appendix 1, average estimates of R_t for the period from July 28 to September 7, 2014, which were made on the basis of the date of report to facilitate comparison with future cases, were used to project future cases, allowing for both uncertainty in the estimates of R_t and stochastic variability in the transmission process.

RESULTS

An animated map with timeline is available at NEJM.org

SCALE OF THE EPIDEMIC

A total of 4507 confirmed and probable EVD cases were reported to the WHO between December 30, 2013, and September 14, 2014 — a 37-week period. A total of 718 confirmed and probable cases and 289 deaths were reported in the week of September 8 through September 14 alone. The numbers of confirmed and probable cases reported by each country over time are shown in Figures 1 and 2. Detailed information was available on 3343 confirmed and 667 probable cases; these cases were used in all our analyses, with the exception of projections (results of analyses based on confirmed, probable, and suspected cases are provided in Supplementary Appendix 1). The median age of persons with EVD was 32 years (interquartile range, 21 to 44), and there were no significant differences in the age distribution of persons with EVD among countries. The majority of persons with EVD (60.8%) were between 15 and 44 years of age (this age group makes up only 44% of the population) (Table 1). There were also no significant differences among countries in the total numbers of male and female persons with EVD reported (49.9% of the total were male patients; within-country differences have not yet been fully investigated). EVD has taken a heavy toll among health care workers in Guinea, Liberia, and Sierra Leone. By September 14, a total of 318 cases, including 151 deaths, had been reported among health care workers.

GEOGRAPHIC ORIGIN AND THE SPREAD OF INFECTION

In December 2013, the first cases occurred in Guéckédou and Macenta districts, the focus of the epidemic in Guinea. During March 2014, a rise in the numbers of cases in these two districts, in addition to the first reports from Lofa and other districts in Liberia, was followed by the discovery of cases in the capital, Conakry. A second increase in case incidence in Guinea — first in Guéckédou and Macenta and then in the capital — occurred in May and June.

During May, the focus of the epidemic in Guinea expanded to the neighboring districts of Kenema and Kailahun in Sierra Leone, and in June further cases were reported in Lofa district in Liberia. These five districts have remained the focus of transmission in the border areas of the three countries. From July onward, there were sharp increases in case numbers at the epidemic foci in all three countries, at other sites away from the epicenter, and in the capital cities of Conakry, Freetown, and Monrovia (Fig. 1, and animated map and timeline at NEJM.org). However, although EVD has spread to many parts of Guinea, Liberia, and Sierra Leone, it has not been reported in all districts in the countries: among the total of 67 districts in the three countries, only 43 have reported one or more confirmed, probable, or suspected cases, and more than 90% of cases have been reported from just 14 districts.

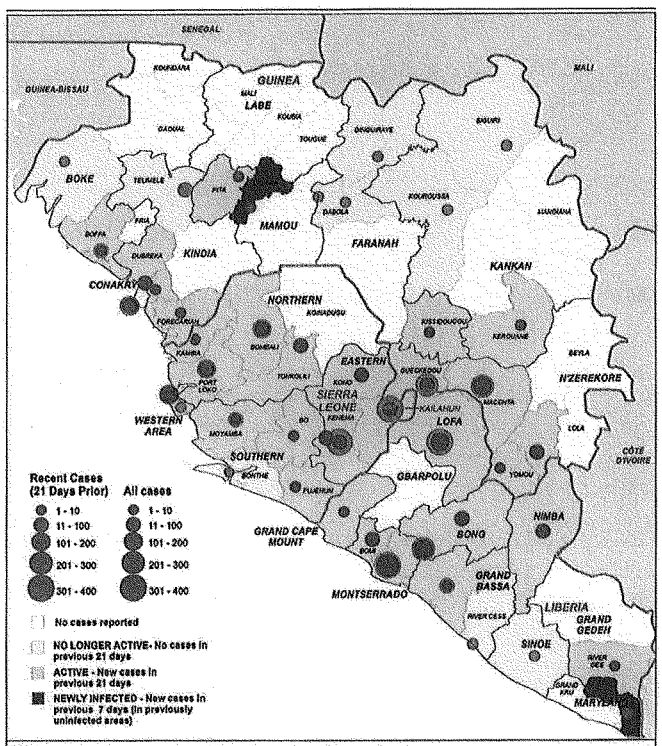

Figure 1. Districts Affected by Ebola Virus Disease in Three Countries in Africa.

The map shows the districts that have been affected by Ebola virus disease in Guinea, Liberia, and Sierra Leone. Gray circles indicate the total numbers of confirmed and probable Ebola cases reported in each affected district, and red circles the number reported during the 21 days leading up to September 14, 2014.

CLINICAL MANIFESTATIONS AND CASE FATALITY RATE

Table 1 provides information on demographic characteristics and symptom frequency in patients with confirmed or probable EVD with a definitive outcome in Guinea, Liberia, Nigeria, and Sierra Leone. The most common symptoms reported between symptom onset and case detection included fever (87.1%), fatigue (76.4%), loss of appetite (64.5%), vomiting (67.6%), diarrhea (65.6%), headache (53.4%), and abdominal pain (44.3%). Specific hemorrhagic symptoms were rarely reported (in <1% to 5.7% of patients). "Unexplained bleeding," however, was reported in 18.0% of cases. These patterns are similar in each country (see Supplementary Appendix 1).

Assessing the case fatality rate during this

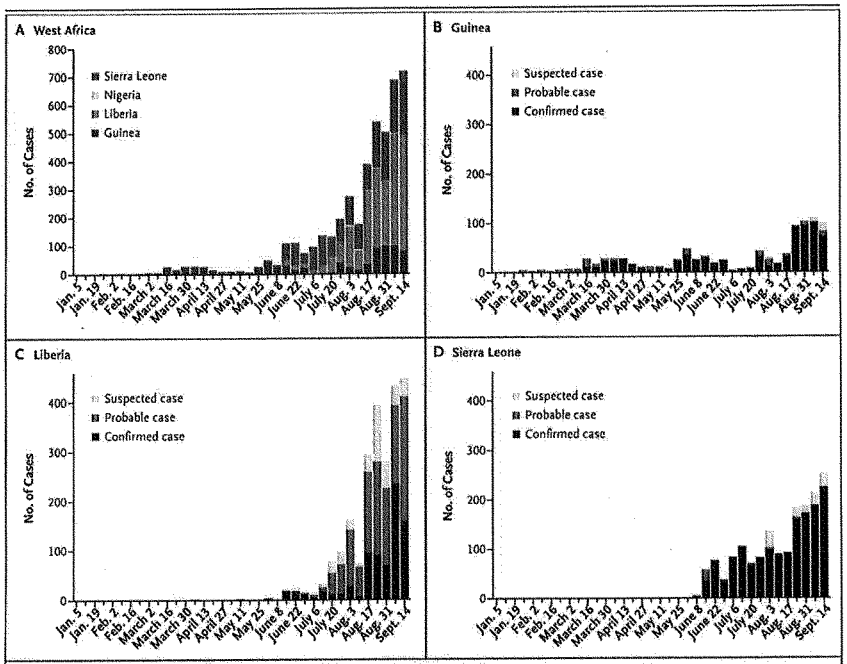

Figure 2. Weekly Incidence of Confirmed, Probable, and Suspected Ebola Virus Disease Cases.

Shown is the weekly incidence of confirmed, probable, and suspected EVD cases, according to actual or inferred week of symptom onset. A suspected case is illness in any person, alive or dead, who has (or had) sudden onset of high fever and had contact with a person with a suspected, probable, or confirmed Ebola case or with a dead or sick animal; any person with sudden onset of high fever and at least three of the following symptoms: headache, vomiting, anorexia or loss of appetite, diarrhea, lethargy, stomach pain, aching muscles or joints, difficulty swallowing, breathing difficulties, or hiccupping; or any person who had unexplained bleeding or who died suddenly from an unexplained cause. A probable case is illness in any person suspected to have EVD who was evaluated by a clinician or any person who died from suspected Ebola and had an epidemiologic link to a person with a confirmed case but was not tested and did not have laboratory confirmation of the disease. A probable or suspected case was classified as confirmed when a sample from the person was positive for Ebola virus in laboratory testing.

epidemic is complicated by incomplete information on the clinical outcomes of many cases, both detected and undetected. Estimates of the case fatality rate (Table 2) derived by calculating the ratio of all reported deaths to all reported cases to date are low in comparison with historical outbreaks and are highly variable among the affected countries. However, estimating the case fatality rate using only the 46% of cases with definitive recorded clinical outcomes gives higher estimates that show no significant variation among countries (Table 2). This analysis shows that by September 14, a total of 70.8% (95% confidence interval [CI], 68.6 to 72.8) of case patients with definitive outcomes have died, and this rate was consistent among Guinea, Liberia, and Sierra Leone (Table 2). The case fatality rate in Nigeria was lower (45.5%), though this estimate is based on only 11 recent cases. The case fatality rate among hospitalized case

patients was 64.3% (95% CI, 61.5 to 67.0) lower than that among all patients with definitive outcomes and was consistent among countries. The case fatality rate among health care workers ranged from 56.1% (95% CI, 41.0 to 70.1) in Guinea to 80.0% (95% CI, 68.7 to 87.9) in Liberia (Table 2). Risk factors for a fatal outcome, after adjustment for country, are provided in Table 1. Significant risk factors for death include an age of 45 years or older as compared with 44 years of age or younger (odds ratio, 2.47; 95% CI, 1.79 to 3.46) and a number of general symptoms (diarrhea, conjunctivitis, difficulty breathing or swallowing, confusion or disorientation, and coma) and hemorrhagic symptoms (unexplained bleeding, bleeding gums, bloody nose, bleeding at the injection site, and bleeding from the vagina) (odds ratios and 95% confidence intervals for these factors are provided in Table 1).

KEY TIME PERIODS

The mean incubation period was 11.4 days (Table 2 and Fig. 3A), and did not vary by country (Fig. 3B, 3C, and 3D). Approximately 95% of the case patients had symptom onset within 21 days after exposure (Fig. 3A), which is the recommended period for follow-up of contacts. The estimated mean (±SD) serial interval was 15.3±9.3 days (Table 2 and Fig. 3E), which is the same as the estimated mean generation time (see Supplementary Appendix 1). The mean time from the onset of symptoms to hospitalization, a measure of the period of infectiousness in the community, was 5.0±4.7 days (Table 2), and was no shorter for health care workers than for other case patients. The mean time to death after admission to the hospital was 4.2±6.4 days, and the mean time to discharge was 11.8±6.1 days. The mean length of stay in hospital was 6.4 days in Guinea, Liberia, and Sierra Leone (Table 2).

QUANTIFICATION OF THE SPREAD OF INFECTION AND PROJECTION OF FUTURE CASES

Estimates of the basic reproduction number, R_0, were 1.71 (95% CI, 1.44 to 2.01) for Guinea, 1.83 (95% CI, 1.72 to 1.94) for Liberia, 1.20 (95% CI, 0.67 to 1.96) for Nigeria, and 2.02 (95% CI, 1.79 to 2.26) for Sierra Leone (Table 2, and Fig. S7 in Supplementary Appendix 1). Although R_0 reflects the maximum potential for growth in case incidence, Figure S7 in Supplementary Appendix 1 shows the variation in the estimated net reproduction number, R_t, during the course of the epidemic. Between March and July 2014, the R_t for Guinea fluctuated around the threshold value of 1 but appeared to increase again in August, reflecting the rise in case incidence in Macenta district. In Sierra Leone, the value of R_t dropped between June and August as the case incidence stabilized in Kenema and Kailahun. In Liberia, the R_t remained above 1 for most of the period between March and August, reflecting the consistent increase in case incidence (Fig. S9) in that country.

The growing numbers of cases reported from Guinea, Liberia, and Sierra Leone in August and early September suggest that the R_t remains above 1 in a still-expanding epidemic (reliable estimates of R_t could be obtained only to early September owing to reporting delays). As of September 14, the doubling time of the epidemic was 15.7 days in Guinea, 23.6 days in Liberia, and 30.2 days in Sierra Leone (Table 2). We estimate that, at the current rate of increase, assuming no changes in control efforts, the cumulative number of confirmed and probable cases by November 2 (the end of week 44 of the epidemic) will be 5740 in Guinea, 9890 in Liberia, and 5000 in Sierra Leone, exceeding 20,000 cases in total (Fig. 4, and Table S8 in Supplementary Appendix 2). The true case load, including suspected cases and undetected cases, will be higher still.

DISCUSSION

Although the current epidemic of EVD in West Africa is unprecedented in scale, the clinical course of infection and the transmissibility of the virus are similar to those in previous EVD outbreaks. The incubation period, duration of illness, case fatality rate, and R_0 are all within the ranges reported for previous EVD epidemics.[7,13-18] Our estimates of R_0 are similar to other recent estimates for this West Africa epidemic.[19-23] The combination of signs and symptoms recorded between symptom onset and clinical presentation is also similar to that in other reports.[14,17,24-26] We infer that the present epidemic is exceptionally large, not principally because of the biologic characteristics of the virus, but rather because of the attributes of the affected populations and because control efforts have been insufficient to halt the spread of infection.

Certain characteristics of the affected populations may have led to the rapid geographic dissemination of infection. The populations of Guinea, Liberia, and Sierra Leone are highly interconnected, with much cross-border traffic at the epicenter and relatively easy connections by road between rural towns and villages and between densely populated national capitals. The large intermixing population has facilitated the spread of infection, but a large epidemic was not inevitable. In Nigeria, the number of cases has so far been limited, despite the introduction of infection into the large cities of Lagos (approximately 20 million people) and Port Harcourt (>1 million people). The critical determinant of epidemic size appears to be the speed of implementation of rigorous control measures.

Previous experience with EVD outbreaks, though they have been limited in size and geographic spread, suggests that transmission can

Table 1. Demographic Characteristics and Signs and Symptoms in Confirmed and Probable Ebola Case Patients with a Definitive Clinical Outcome in Guinea, Liberia, Nigeria, and Sierra Leone.*

Variable	All Patients	Patients Who Died	Patients Who Recovered	Odds Ratio (95% CI)†
		no./total no. (%)		
Demographic characteristics				
Male sex	685/1415 (48.4)	515/1056 (48.8)	170/359 (47.4)	0.93 (0.73–1.19)
Age group				
<15 yr	190/1378 (13.8)	145/1021 (14.2)	45/357 (12.6)	1.18 (0.83–1.71)
15–44 yr	838/1378 (60.8)	577/1021 (56.5)	261/357 (73.1)	0.48 (0.36–0.62)
≥45 yr	350/1378 (25.4)	299/1021 (29.3)	51/357 (14.3)	2.47 (1.79–3.46)
Health care worker	158/1429 (11.1)	112/1067 (10.5)	46/362 (12.7)	0.86 (0.60–1.27)
Signs and symptoms				
General symptoms				
Fever‡	1002/1151 (87.1)	746/846 (88.2)	256/305 (83.9)	1.34 (0.92–1.95)
Fatigue	866/1133 (76.4)	633/829 (76.4)	233/304 (76.6)	0.94 (0.68–1.28)
Loss of appetite	681/1055 (64.5)	498/778 (64.0)	183/277 (66.1)	0.92 (0.69–1.23)
Vomiting	753/1114 (67.6)	566/816 (69.4)	187/298 (62.8)	1.19 (0.89–1.59)
Diarrhea	721/1099 (65.6)	555/813 (68.3)	166/286 (58.0)	1.42 (1.06–1.89)
Headache	553/1035 (53.4)	407/757 (53.8)	146/278 (52.5)	1.03 (0.78–1.36)
Abdominal pain	439/992 (44.3)	311/715 (43.5)	128/277 (46.2)	0.85 (0.64–1.13)
Muscle pain	385/990 (38.9)	293/728 (40.2)	92/262 (35.1)	1.24 (0.92–1.67)
Joint pain	374/950 (39.4)	283/695 (40.7)	91/255 (35.7)	1.32 (0.98–1.80)
Chest pain	254/686 (37.0)	196/488 (40.2)	58/198 (29.3)	1.53 (1.07–2.20)
Cough	194/655 (29.6)	150/462 (32.5)	44/193 (22.8)	1.74 (1.18–2.61)
Difficulty breathing	155/665 (23.3)	123/472 (26.1)	32/193 (16.6)	1.68 (1.10–2.63)
Difficulty swallowing	169/514 (32.9)	138/375 (36.8)	31/139 (22.3)	2.22 (1.41–3.59)
Conjunctivitis	137/658 (20.8)	109/465 (23.4)	28/193 (14.5)	2.03 (1.29–3.29)
Sore throat	102/467 (21.8)	82/339 (24.2)	20/128 (15.6)	1.94 (1.13–3.46)
Confusion	84/631 (13.3)	68/446 (15.2)	16/185 (8.6)	2.00 (1.14–3.71)
Hiccups	108/947 (11.4)	91/699 (13.0)	17/248 (6.9)	2.15 (1.27–3.82)
Jaundice	65/627 (10.4)	52/443 (11.7)	13/184 (7.1)	1.83 (0.99–3.63)
Eye pain	48/622 (7.7)	39/438 (8.9)	9/184 (4.9)	1.95 (0.95–4.40)
Rash	37/642 (5.8)	30/453 (6.6)	7/189 (3.7)	1.90 (0.86–4.83)
Coma or unconsciousness	37/627 (5.9)	34/445 (7.6)	3/182 (1.6)	4.59 (1.61–19.34)

Table 1. (Continued.)

Variable	All Patients	Patients Who Died	Patients Who Recovered	Odds Ratio (95% CI)†
		no./total no. (%)		
Unexplained bleeding	168/932 (18.0)	140/693 (20.2)	28/239 (11.7)	1.83 (1.20–2.90)
Hematemesis	26/670 (3.9)	20/503 (4.0)	6/167 (3.6)	1.07 (0.44–3.01)
Blood in stool	48/843 (5.7)	35/614 (5.7)	13/229 (5.7)	0.98 (0.52–1.96)
Bleeding gums	19/837 (2.3)	18/608 (3.0)	1/229 (0.4)	6.69 (1.35–121.32)
Bloody nose	16/836 (1.9)	15/610 (2.5)	1/226 (0.4)	8.02 (1.54–148.62)
Bloody cough	20/831 (2.4)	16/605 (2.6)	4/226 (1.8)	1.63 (0.58–5.82)
Other bleeding	8/657 (1.2)	5/493 (1.0)	3/164 (1.8)	0.45 (0.11–2.23)
Bleeding at injection site	20/833 (2.4)	19/605 (3.1)	1/228 (0.4)	6.51 (1.32–118.04)
Blood from vagina§	14/431 (3.2)	13/290 (4.5)	1/126 (0.8)	6.0 (1.11–112.4)
Blood in urine	10/827 (1.2)	9/601 (1.5)	1/226 (0.4)	5.14 (0.90–98.73)
Bleeding under skin	5/827 (0.6)	5/604 (0.8)	0/223	NA

* Data are as of September 14, 2014. Patients with date of onset up to August 17, 2014, were included. Total numbers are the numbers of patients with data on the variable in question. NA denotes not applicable.
† Odds ratios are adjusted for country. CI denotes confidence interval.
‡ Fever was defined as a body temperature above 38°C; however, in practice, health care workers at the district level often do not have a medical thermometer and simply ask whether the person's body temperature is more elevated than usual.
§ Percentages reflect only female patients.

be interrupted, and case incidence reduced, within 2 to 3 weeks after the introduction of control measures.[1,5,7,14-17,24,27-31] This view is reinforced by the estimates of case reproduction number presented in this analysis. We estimate the R_0 to have varied between 1.71 (upper boundary of the 95% confidence interval, 2.01) in Guinea to 2.02 (upper boundary of the 95% confidence interval, 2.26) in Sierra Leone. This means that transmission has to be a little more than halved to achieve control of the epidemic and eventually to eliminate the virus from the human population. Considering the prospects for a novel Ebola vaccine, an immunization coverage exceeding 50% would have the same effect. Greater reductions in transmission would, of course, be desirable, but minimum requirements for the containment of EVD are far less severe than for the containment of more contagious diseases, such as measles. Between March and July 2014, the reproduction number in Guinea fluctuated around the threshold value of 1, suggesting that modest further intervention efforts at that point could have achieved control.

The analyses in this paper can be used to inform recommendations regarding control measures. The measured duration of the incubation period, and its variation, imply that the advice to follow case contacts for 21 days[1] is appropriate. To curtail transmission in the community, the period from symptom onset to hospitalization (a mean of 5 days but a maximum of >40 days) clearly needs to be reduced. Surprisingly, the mean was not shorter among health care workers, who are at risk both of acquiring and transmitting the infection to others. The average length of hospital stay of about 1 week (6.4 days) means that the number of beds required to treat EVD patients is roughly equal to the rising weekly case incidence. Even without allowing for underreporting, 995 patients with confirmed, probable, or suspected infection were known to need clinical care in the week of September 8 through 14 alone, which far exceeds the present bed capacity in Guinea, Liberia, and Sierra Leone (approximately 610 beds in total).

The data used in these analyses were collected in the field by various field teams across Guinea, Liberia, Nigeria, and Sierra Leone. Although they provide an excellent opportunity to better understand the current EVD epidemic in Africa, they understate the magnitude of the

Table 2. Estimates of Epidemiologic Variables for Confirmed and Probable Ebola Cases, According to Country, as of September 14, 2014.*

Variable	All Countries		Guinea		Liberia		Nigeria		Sierra Leone	
	no. of days	no. of patients with data	no. of days	no. of patients with data	no. of days	no. of patients with data	no. of days	no. of patients with data	no. of days	no. of patients with data
Incubation period										
Single-day exposures										
Observed†	9.4±7.4	500	10.7±8.7	35	9.5±6.6	259	NC	<10	9.0±8.1	201
Fitted‡	9.1±7.3	500	9.9±9.8	35	9.4±6.7	259	NC	<10	8.5±7.6	201
Multi-day exposures										
Observed†	11.4±NA	155	10.9±NA	20	11.7±NA	79	NC	<10	10.8±NA	48
Fitted‡	9.7±5.5	155	8.3±4.5	20	9.9±5.7	79	NC	<10	9.9±5.6	48
Serial interval§										
Observed	15.3±9.1	92	19.0±11.0	40	13.1±6.6	26	NC	<10	11.6±5.6	25
Fitted¶	15.3±9.3	92	19.0±11.2	40	13.1±7.8	26	NC	<10	11.6±6.3	25
R_0‖										
Mean (95% CI)	—		*1.71 (1.44–2.01)*		*1.83 (1.72–1.94)*		*1.2 (0.67–1.96)*		*2.02 (1.79–2.26)*	
Doubling time — days (95% CI)	—		*17.53 (13.18–26.64)*		*15.78 (14.4–17.37)*		*59.75 (13.27–∞)*		*12.84 (10.92–15.66)*	
R^{**}										
Mean (95% CI)	—		*1.81 (1.60–2.03)*		*1.51 (1.41–1.60)*				*1.38 (1.27–1.51)*	
Doubling time — days (95% CI)	—		*15.7 (12.9–20.3)*		*23.6 (20.2–28.2)*		*NC*		*30.2 (23.6–42.3)*	
Interval from symptom onset										
To hospitalization	5.0±4.7	1135	5.3±4.3	484	4.9±5.1	245	4.1±1.4	11	4.6±5.1	395
To hospital discharge	16.4±6.5	267	16.3±6.1	152	15.4±8.2	41	NC	<10	17.2±6.2	70
To death	7.5±6.8	594	6.4±5.3	248	7.9±8.0	212	NC	<10	8.6±6.9	128
To WHO notification	6.1±8.5	2185	7.5±10.4	743	6.0±8.7	797	3.9±2.3	11	4.5±5.0	634
Interval from WHO notification										
To hospital discharge	11.8±7.2	312	11.1±5.8	164	11±8.0	41	NC	<10	12.7±8.4	102
To death	-3.0±13.8	584	-4.4±14.4	300	-1.8±13.6	221	NC	<10	-1.6±9.2	58
Interval from hospitalization										
To hospital discharge	11.8±6.1	290	11±5.4	159	12.8±8.1	40	NC	<10	12.4±5.8	86
To death	4.2±6.4	121	2.5±3.4	36	4.5±6.0	63	NC	<10	4.4±6.0	17
Duration of hospital stay — days††	6.42		4.99		6.72		NC		6.88	

	rate (95% CI)	no. of patients with data	rate (95% CI)	no. of patients with data	rate (95% CI)	no. of patients with data	rate (95% CI)	no. of patients with data	rate (95% CI)	no. of patients with data
Case fatality rate										
All cases, based on current status	37.7 (36.1–39.2)	3747	57.5 (53.7–61.1)	677	34.7 (32.4–37.1)	1616	40.0 (19.8–64.3)	15	31.6 (29.3–34.1)	1439
All cases, based on definitive outcome	70.8 (68.6–72.8)	1737	70.7 (66.7–74.3)	542	72.3 (68.9–75.4)	739	45.5 (21.3–72.0)	11	69.0 (64.5–73.1)	445
Before August 18	71.3 (68.7–73.7)	1244	68.7 (64.3–72.8)	454	79.8 (75.7–83.4)	416	50.0 (23.7–76.3)	10	65.4 (60.4–70.1)	364
August 18–September 14	59.9 (54.7–64.9)	354	80.7 (71.2–87.6)	88	41.1 (34.3–48.2)	190	NC	<10	84.0 (74.1–90.6)	75
All hospitalized cases, based on definitive outcome	64.3 (61.5–67.0)	1153	64.7 (60.1–68.9)	450	67.0 (62.0–71.7)	361	40.0 (16.8–68.7)	10	61.4 (56.1–66.5)	332
According to sex										
Male	72.2 (69.1–75.1)	874	68.5 (62.6–73.9)	254	74.9 (70.4–79.0)	395	NC	<10	71.9 (65.7–77.5)	221
Female	69.9 (66.7–73.0)	818	72.7 (67.3–77.6)	286	71.6 (66.4–76.3)	317	NC	<10	64.4 (57.7–70.6)	208
According to age group										
<15 yr	73.4 (67.2–78.8)	218	78.1 (67.3–86.0)	73	70.7 (60.1–79.5)	82	NC	<10	71.4 (59.3–81.1)	63
15–44 yr	66.1 (63.1–69.0)	1012	64.9 (59.5–69.9)	319	70.6 (66.1–74.8)	422	NC	<10	61.4 (55.4–67.0)	264
≥45 yr	80.4 (76.2–84.0)	398	78.6 (71.1–84.6)	140	81.1 (74.4–86.4)	164	NC	<10	82.2 (73.1–88.8)	90
According to occupation										
Health care worker	69.4 (62.1–75.8)	170	56.1 (41.0–70.1)	41	80.0 (68.7–87.9)	65	NC	<10	68.4 (55.5–79.0)	57
Non–health care worker	70.9 (68.6–73.1)	1567	71.9 (67.8–75.6)	501	71.5 (68.0–74.8)	674	NC	<10	69.1 (64.3–73.5)	388

* Plus–minus values are means ±SD. NA denotes not available, NC not calculated, and WHO World Health Organization.

† Contacts on day 0 (i.e., on the day of symptom onset) were excluded.

‡ Contacts on day 0 (i.e., on the day of symptom onset) were excluded. Gamma probability distributions were fitted to confirmed and probable cases.

§ The serial interval is the interval between disease onset in an index case patient and disease onset in a person infected by that index case patient. In this category, the number of patients with data is the number of epidemiologically linked pairs in which the later case patient reported only one direct contact.

¶ Gamma probability distributions were fitted to confirmed and probable cases.

‖ The basic reproduction number (R_0) is the average number of secondary cases that arise when one primary case is introduced into an uninfected population. We estimated the R_0 and associated mean doubling time, using a serial interval of 15.3 days, for the period up to March 30, 2014, for Guinea; up to August 24, 2014, for Liberia and Nigeria; and up to July 6, 2014, for Sierra Leone. This number was estimated for individual countries only and not for the combined data.

** We estimated R_t the mean value of R_t (the estimated net reproduction number), and associated mean doubling time, using a serial interval of 15.3 days, for the period of July 21 to August 31, 2014. This number was estimated for individual countries only and not for the combined data.

†† The mean duration of hospital stay was calculated as the weighted average of the observed means from the hospitalization-to-discharge and hospitalization-to-death distributions. This variable was not calculated in Nigeria because there were fewer than 10 case patients with data.

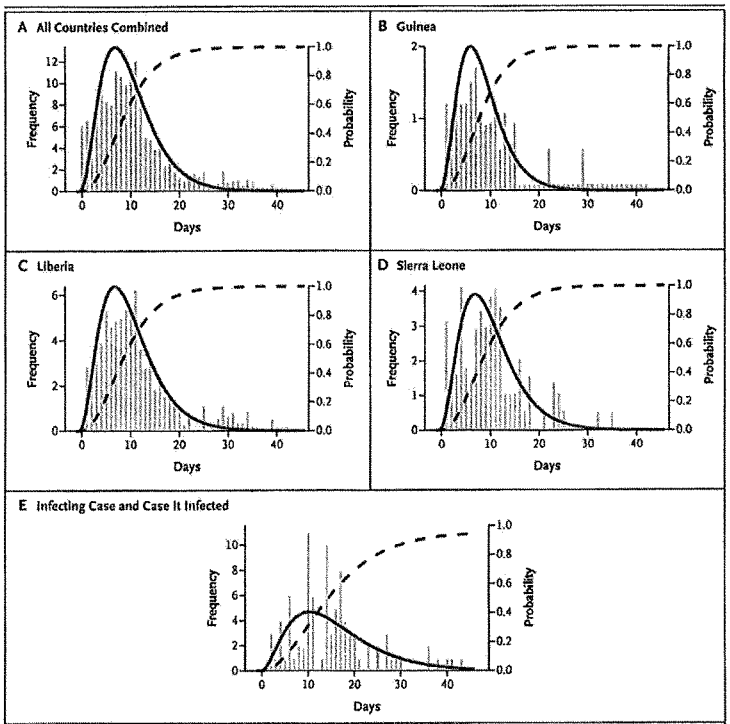

Figure 3. Time between Exposure and Disease Onset.

Panel A through D show the observed times (>0) between exposure and disease onset for all countries, Guinea, Liberia, and Sierra Leone, respectively, including only cases with multiple exposure days (histograms in gray), best-fit (gamma) probability density function (red curves) and cumulative distribution for the incubation period (blue curves). Panel E shows the observed times between disease onset in an index case patient and disease onset in the person infected by the index case patient (histograms in gray) and best-fit (gamma) probability density function (red curve) and cumulative distribution (blue curve) for the serial interval.

problem. It is likely that many cases have not been detected, and for those cases that have been reported, case records are often incomplete. Therefore, interpretation of the available case data requires care. We recognize, however, that data are being collected under extreme conditions, and the top priorities are patient care, contact tracing, and limiting transmission in the community, rather than epidemiologic investigations. In addition, in this initial assessment it was not possible to consider all the sources of heterogeneity (e.g., geographic and health care-related) affecting the development of this epidemic. Thus the future projections provided here should be regarded as indicative of likely future trends more than precise predictions. Despite these limitations and the resulting uncertainties, the results presented here help us to understand the spread of infection and the potential for control.

Some details of the current analysis remain

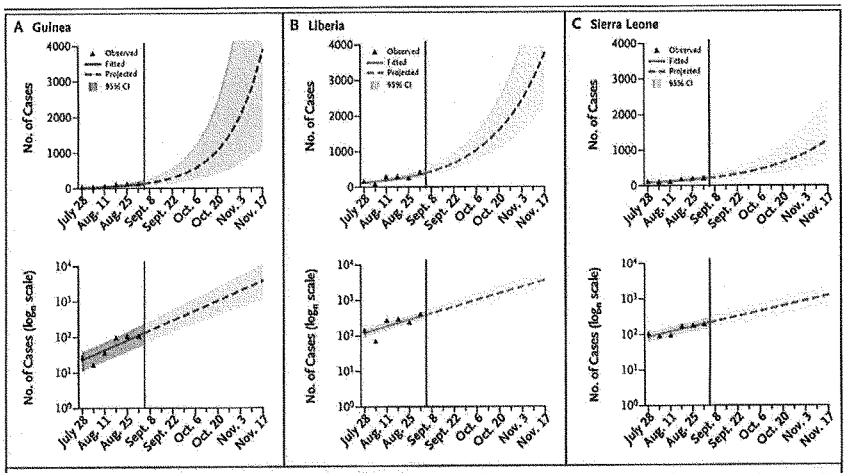

Figure 4. Observed and Projected Case Incidence.

Observed and projected weekly case incidence in Guinea (Panel A), Liberia (Panel B), and Sierra Leone (Panel C) are shown on linear (upper panels) and logarithmic (lower panels) scales.

to be confirmed by further investigation. For example, our estimate of 15.3 days for the serial interval is slightly longer than past estimates.[32,33] This may reflect the difficulties of collecting temporally unbiased data on exposure through contact tracing, either in the current outbreak or during previous outbreaks. Alternatively, a longer serial interval may indicate that case isolation has been less effective in the current epidemic, resulting in a higher proportion of transmission events occurring late in the course of illness.

Case fatality is among the most important topics for further investigation. Our estimates of case fatality are consistent in Guinea (70.7%), Liberia (72.3%), and Sierra Leone (69.0%) when estimates are derived with data only for patients with recorded definitive clinical outcomes (1737 patients). Estimates for hospitalized patients with recorded definitive clinical outcomes are also consistent across countries but are lower than those for all patients with definitive clinical outcomes. In contrast, simply taking the ratio of reported deaths to reported cases gives estimates that differ among countries (Table 2). These discrepancies perhaps reflect the challenges of clinical follow-up and data capture. The lower case fatality rate among hospitalized patients than among all persons with EVD could indicate that hospitalization increased survival, that cases of EVD in nonhospitalized persons were more likely to be detected if they were fatal, or that some persons died before they could be admitted to the hospital. In each of the countries studied, the case fatality rate is lowest among persons 15 to 44 year of age, and highest among persons 45 years of age or older, and some limited variation in the case fatality rate among health care workers was observed among countries. The reasons for this variation are not yet known. Moreover, the case fatality rate among hospitalized patients may differ from that among patients who are never seen by a physician. Liberia has reported an unusually high proportion of deaths among patients with suspected (but not probable or confirmed) EVD cases (58% [440 of 754 patients]), as compared with Guinea (13% [4 of 30 patients]) and Sierra Leone (35% [74 of 213 patients]). The implication is that many true EVD case patients in Liberia may have died before receiving a definitive diagnosis.

Notwithstanding the geographic variation in case incidence within and among Guinea, Liberia, and Sierra Leone, the current epidemiologic outlook is bleak. Forward projections suggest that unless control measures — including improvements in contact tracing, adequate case isolation, increased capacity for clinical management, safe burials, greater community engagement, and support from international partners — improve quickly, these three countries will soon be reporting thousands of cases and deaths each week, projections that are similar to those of the Centers for Disease Control and Prevention. Experimental therapeutics and vaccines offer promise for the future but are unlikely to be available in the quantities needed to make a substantial difference in control efforts for many months, even if they are proved to be safe and effective. Furthermore, careful assessment of the most effective means of utilizing such interventions (e.g., vaccination or treatment of contacts versus health care workers) will be required while stocks remain limited. For the medium term, at least, we must therefore face the possibility that EVD will become endemic among the human population of West Africa, a prospect that has never previously been contemplated. The risk of continued epidemic expansion and the prospect of endemic EVD in West Africa call for the most forceful implementation of present control measures and for the rapid development and deployment of new drugs and vaccines.

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Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

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APPENDIX

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Committee on Energy and Commerce
Subcommittee on Oversight and Investigations

Update on the U.S. Public Health Response to the Ebola Outbreak
November 17, 2014

Attachment 3

naturalnews.com printable article

Originally published October 15 2014

Shock W.H.O. report: Ebola has 42-day incubation period, not 21 days!

by Mike Adams, the Health Ranger, NaturalNews Editor

(NaturalNews) A jaw-dropping report released by the World Health Organization on October 14, 2014 reveals that 1 in 20 Ebola infections has an incubation period longer than the 21 days which has been repeatedly claimed by the U.S. Centers for Disease Control.

This may be the single most important -- and blatantly honest -- research report released by any official body since the beginning of the Ebola outbreak. The WHO's "Ebola situation assessment" report, found here, explains that only 95% of Ebola infections experience incubation within the widely-reported 21-day period. Here's the actual language from the report:

95% of confirmed cases have an incubation period in the range of 1 to 21 days; 98% have an incubation period that falls within the 1 to 42 day interval. [1]

Unless the sentence structure is somehow misleading, this passage appears to indicate the following:

- 95% of Ebola incubations occur from 1 - 21 days
- 3% of Ebola incubations occur from 21 - 42 days
- 2% of Ebola incubations are not explained (why?)

If this interpretation of the WHO's statistics are correct, it would mean that:

- 1 in 20 Ebola infections may result in incubations lasting significantly longer than 21 days

- The 21-day quarantine currently being enforced by the CDC is entirely insufficient to halt an outbreak

- People who are released from observation or self-quarantine after 21 days may still become full-blown Ebola patients in the subsequent three weeks, **even if they have shown no symptoms of infection during the first 21 days.** (Yes, read that again...)

Any declaration that an outbreak is over requires 42 days with no new infections

Underscoring the importance of the 42-day rule, the WHO document openly states that **a 42-day observation period with no new outbreaks is required before declaring the outbreak is under control.** In the WHO's own words:

WHO is therefore confident that detection of no new cases, with active surveillance in place, throughout this 42-day period means that an Ebola outbreak is indeed over. [1]

W.H.O. "alarmed" over false pronouncements of negative Ebola tests

Just as disturbing is the WHO's open warning that government health officials who are announcing negative Ebola findings in patients mere hours after them being tested are grossly misleading the public and essentially practicing quack medicine.

As explained by the WHO:

WHO is alarmed by media reports of suspected Ebola cases imported into new countries that are said, by government officials or ministries of health, to be discarded as "negative" within hours after the suspected case enters the country. ***Such rapid determination of infection status is impossible,*** *casting grave doubts on some of the official information that is being communicated to the public and the media.* [1]

In other words, WHO is telling us that all those public pronouncements by government health authorities are meaningless. An Ebola infection determination cannot be made in mere hours, it turns out. In fact, as WHO explains, a suspected case of Ebola must be observed and tested **for 48 hours** before any degree of certainty can be reached about the Ebola infection status:

Two negative RT-PCR test results, at least 48 hours apart, are required for a clinically asymptomatic patient to be discharged from hospital, or for a suspected Ebola case to be discarded as testing negative for the virus. [1]

"No signs" that outbreaks are under control

Finally, this WHO report goes on to conclude that the Ebola outbreaks of Guinea, Liberia and Sierra Leone are multiplying out of control. The report even cites the curious phenomenon of unexpected outbreak surges taking place in areas once thought to be eradicated:

In Guinea, Liberia, and Sierra Leone, new cases continue to explode in areas that looked like they were coming under control. An unusual characteristic of this epidemic is a persistent cyclical pattern of gradual dips in the number of new cases, followed by sudden flare-ups. WHO epidemiologists see no signs that the outbreaks in any of these 3 countries are coming under control. [1]

Is it possible that these resurging outbreaks are being caused by governments failing to monitor potentially infected Ebola victims for a full 42 days? If they only observe them for 21 days, then 1 out of 20 infected victims may be cleared as "clean" and allowed back into the population where they soon become symptomatic and spread the disease even further.

U.S. doctors and health officials have been taught the wrong number: 21 days is only HALF the duration

It is extremely disturbing to realize that, to our best knowledge, every single person in the United States who has been suspected of harboring Ebola has been instructed to monitor symptoms for only 21 days, not the necessary 42 days.

This means that **Ebola-infected U.S. citizens who are "cleared" of Ebola may still erupt with the deadly virus for a period of three more weeks.**

Why hasn't anyone reported this until now? How is this not one of the single most important pieces of information in the world at this moment when all human life on our planet is now legitimately threatened by an uncontrolled viral outbreak with a 70 percent fatality rate and no recognized treatments or cures?

Prepare yourself now with the free downloadable MP3 audio files at www.BioDefense.com

Sources for this article include:

[1] http://www.who.int/mediacentre/news/ebola/14...

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Attachment 4

The New York Times http://nyti.ms/1BF9ENV

THE OPINION PAGES | OP-ED CONTRIBUTOR

In India, Growth Breeds Waste

By JERRY PINTO NOV. 16, 2014

MUMBAI, INDIA — There is, we are told, a small island of plastic in the middle of the Pacific Ocean. There was, we are told, a fatberg plucked out of the sewers of London. But nowhere in the world is dirt as visible as in India. It is so visible that for many Indians who return from America, even from New York, it isn't the Grand Canyon or the Met they remember. It's how clean the streets were.

That's because you can't get away from the dirt of India. My city, Mumbai, has an estimated 20 million people. According to one estimate, we produce 630 grams of garbage per person per day — that's 12.6 million tons every day. Mumbai is also the richest city in the country, with one-third of the national income tax revenue coming from here. The richer you are, the more waste you produce.

And that's only talking about the garbage we see. A doctor told me she can't measure her patients' Vitamin B levels accurately because fecal contamination through the tap water skews the numbers too much. The city's 19th-century sewers often run right next to the water pipes and both are porous, and as you learned in Chemistry 101, if two liquids with different degrees of concentration are separated by something with teeny-tiny holes, osmosis will do the rest.

India now has its own clean-up campaign, inaugurated by a new-broom prime minister. This is well and good. No one can deny that being clean is. "Cleanliness is next to godliness," my grandmother would say to my mother. "Then let's be godly instead," my mother would answer, tapping some more ash from a bidi on the floor. No one agreed with her. We Indians are cleanly people, we like to think. Hindus and Muslims alike bathe every day because it's in the scriptures. We wash our homes every day, and the urban middle class throws out yesterday's drinking water because it is "stale." But that's the private sphere.

In the public sphere, we are consistently awful. Arthur Koestler once said that breathing the air in Mumbai felt like "a wet, smelly diaper was being wrapped around my head." I returned from Delhi recently, and there I felt like my head had been stuck in the exhaust of a truck. Hundreds of ministers and bureaucrats and workers travel around the city in hundreds of cars, each one in a single car with his or her own driver, each one sighing at the density of the traffic, each one complaining about the quality of the air, not one admitting to being part of the problem.

In 1901, Mahatma Gandhi, the father of the nation, as we like to call him, was struck by how the delegates at a meeting of the Indian National Congress in Calcutta had made the toilets of the house they were living in too filthy to use. Then they turned a verandah into an open-air latrine. Young Gandhi chided them but was told that cleaning the toilets was the sweepers' job.

Sweepers in India aren't people who choose to be sanitation engineers. They're people who are born to be sanitation engineers, and they are not supposed to hope to be anything else. They're the outcasts of Indian society; "untouchables," they used to be called, unseeables. Then Gandhi started calling them Harijans, People of God. They have since renamed themselves Dalits, the Broken People or the Oppressed People. Reservations — the Indian word for the affirmative action measures prescribed by the Constitution — may have helped many of them become doctors and lawyers and engineers, but most of the people who clean latrines in India still come from the Dalits. (When you take a dump on an Indian train, it falls onto the tracks. After the train has passed a manual scavenger, usually a Dalit, comes by and cleans up.) It is always going to be someone else's job to keep things clean.

Dirt, it is said, is matter in the wrong place. Then what is the right place for it? We have garbage policies to deal with this, but they are not implemented. Although in Mumbai the government asks residents to segregate rubbish into wet and dry waste, municipal workers often mix everything into the same dumpster.

There are still rag pickers and raddiwallas, the men who buy your old papers, bottles and whatever else you don't want. Some of these things go back into the system. Old clothes are bought in the cities and sold in the villages. Used electronics get refurbished and returned into the market. CDs are painted over with religious symbols and hung in cars. We continue to recycle and upcycle.

But we can no longer keep up. There's too much stuff being made now, thanks to the backwash of globalization. Plastic was once an exotic substance, and plastic bags were hoarded and exchanged with ritual solemnity. When I was in the third grade, in 1975, we used chalk on slate for rough calculations. We would write out our lessons in pencil, and every so often would be told to erase them and reuse the notebooks. At the end of every academic year, we would tear out all the unused pages and get them bound as a "rough note" book. No child would be caught dead with one of those now. We're richer, we're more style-conscious and we're dirtier.

I remember my sister's friend, Alice, and her love affair with the Marlboro Man, circa 1978-81. Alice's cousin was in the airlines and he once brought their family some goodies in a plastic bag that had the Marlboro Man doing his macho thing on the outside. Alice used the bag for years, carrying her college books in it. One day, I went over to her house and her mother was at the sewing machine. The bag had split at the seam and was being repaired. Today, it would have ended up on the garbage heap or by the edge of a national highway. It would have become someone else's responsibility.

Jerry Pinto is the author of "Em and the Big Hoom."

A version of this op-ed appears in print on November 17, 2014, in The International New York Times.

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Attachment 5

Forbes http://onforb.es/1rrlhfS

JV ChamaryContributor
I cover the science of life
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Ebola Is Coming. A Travel Ban Won't Stop Outbreaks

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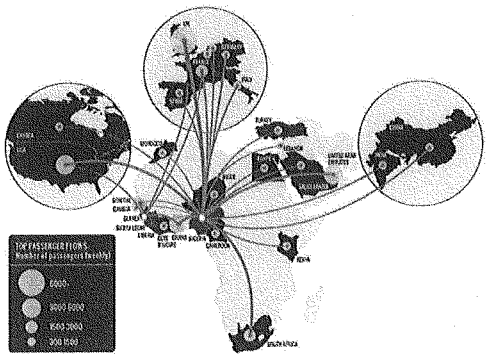


Air traffic connections from West African countries to the rest of the world (Image CC BY 4.0: Alessandro Vespignani / PLOS Currents Outbreaks)

Ebola has officially gone global.

The World Health Organization recently confirmed that a Spanish nurse was the first case of transmission outside Africa. Now it seems the first patient diagnosed in the United States transmitted the disease before he died.

More outbreaks are on their way.

While nations struggle to contain the epidemic in West Africa, other countries are discussing how to protect their own citizens, with governments and health authorities repeatedly asked the same question:

Why don't we just ban flights from Africa?

The idea seems logical. Prevent sick people entering the country, keep your loved ones safe. It's selfish, but understandable. A survey of over 1000 people by NBC News found that the majority of Americans (58%) support a ban on flights from countries where the Ebola virus has broken out.

Dr Tom Frieden, director of the US Centers for Disease Control and Prevention, has tried to explain why he doesn't support a travel ban:

> **"Importantly, isolating countries won't keep Ebola contained and away from American shores. Paradoxically, it will increase the risk that Ebola will spread in those countries and to other countries, and that we will have more patients who develop Ebola in the US. People will move between countries, even when governments restrict travel and trade. And that kind of travel becomes almost impossible to track.**

Simply put: you can't seal the country. If you blocked air travel, it would force desperate individuals to use alternative routes – over land and sea – to escape the epidemic. They'll still end up in the US, except you won't know where.

An attempted travel ban would be like locking yourself in a cabin on a sinking ship and praying the flood doesn't seep through the gaps, and that the water pressure won't be enough to burst through the door.

There are many reasons why a flight ban would be practically impossible to implement. For example, remember that Thomas Eric Duncan, the US patient who caught the Ebola virus in his native Liberia, flew to Texas via Brussels in Belgium. An effective ban would require international coordination. Would every nation agree to quarantine West Africa, to cripple their economy and choke them of humanitarian aid? Unlikely.

But for the sake of argument, what happens when you reduce air travel?

Air traffic reduction

Professor Alex Vespignani, a physicist at Northeastern University in Boston, MA, has developed a computer model that predicts how air traffic affects the spread of Ebola.

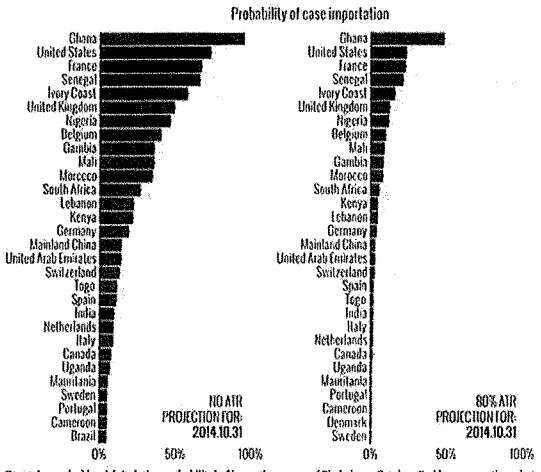
His team at the Laboratory for the Modeling of Biological and Socio-technical Systems used a high-resolution map of human populations (3300 locations in 220 countries) and added daily airline passenger traffic. This model considers connecting flights and final destinations, plus details of the disease dynamics, such as incubation time of the Ebola virus and the fact a susceptible individual can only be infected by someone who shows symptoms of illness.

"All the people who have been exposed to the disease but are not yet in the symptomatic state can in principle travel," says Vespignani. "So since we have this model that puts people on a plane, we can assess the probability of getting an infectious individual in countries around the world."

Air traffic connections is a key factor influencing the chances of importing a case of Ebola. Over 6000 passengers normally flow into the United Kingdom every week, while the US and Ghana each receive over 3000 travellers (see

image at the top of this page). The nations affected by the epidemic have urban areas with international airports, or are connected to West Africa's travel hub, Nigeria, which has had one outbreak of 20 cases from a single importation from Liberia.

Vespignani's computer model simulates a virtual world in which billions of individuals move around, come into contact with one another, and potentially spread disease. The aim is to predict cases like that of Thomas Eric Duncan.



Countries ranked by risk (relative probability) of importing a case of Ebola by 31 October. Red bars are nations that have already experienced case importation. LEFT: No air traffic reduction (ATR) reflects travel before the 2014 epidemic in West Africa. RIGHT: 80% ATR approximates the current reduction in air traffic to and from countries with Ebola. (Image: Alessandro Vespignani / www.mobs-lab.org)

The model calculates the risk of importing at least one Ebola case after running millions of simulations. They're run under two scenarios: no air traffic reduction (ATR) to mirror travel before the epidemic, and reducing air travel by 80% to reflect airlines suspending flights and passengers avoiding travel.

The number of simulations in which a virtual country ends up with an outbreak gives a statistic for the risk of importing an Ebola case in the real world. So if a country gets the disease in half of them, the probability of case importation is 50%. That's the prediction in October for Ghana, which lies between the affected nations – Guinea, Liberia and Sierra Leone – and Nigeria.

Big risks

For most countries, the results indicate that an 80% air traffic reduction more than halves the probability of importing a case of Ebola. For the US, the risk is reduced from around 75% to 25%.

But those risks don't stay static.

An 80% reduction in air traffic only postpones the inevitable. "This is just delaying by four weeks what would have happened without those travel restrictions," Vespignani explains. What about a 90% reduction? It would only buy you another month or two.

Like weather forecasts, Vespignani's virtual model is calibrated using real-world data. As conditions change, the model is revised and simulations are re-run. To make accurate predictions, it needs to be regularly updated with the number of cases and deaths at each geographical area. Like weather, there's higher confidence in forecasts for next month than further into the future.

The predictions above are for October, calibrated from recent data. In the original study, the model was calibrated with data from 6 July to 9 August to predict how an 80% air traffic reduction affects risks for September. The results showed that outside Africa, the risk was tiny – under 5% probability for every country except the UK, which has the most connections. (England's chief medical officer says the UK should expect a handful of cases.) A dozen countries have since joined the UK with a risk over 5%.

As the number of Ebola cases continues to rise in West Africa, so too will the risk of case importation. "We're a little safer for a finite amount of time, but then you are not really solving the problem," says Vespignani.

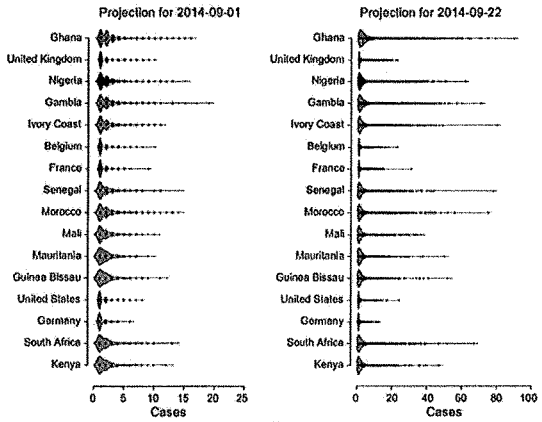
Small outbreaks

The forecasts aren't all doom and gloom though.

As well as modelling the global spread of Ebola, Vespignani's simulations also predict local transmissions within a community, in hospitals and at funerals. And the numbers for secondary infections from imported cases are reassuring.

"These outbreaks should be very, very small – 2 or 3 cases," he says. "I won't panic if tomorrow we hear that in Texas there is another case. This is totally normal."

[Note: A prophetic quote, given that I interviewed Vespignani before it was revealed Thomas Eric Duncan had transmitted the virus.]



Projections for outbreak size (number of cases) after a country imports Ebola. LEFT: 1 September. RIGHT: 22 September. (Image CC BY 4.0: Alessandra Vespignani / PLOS Currents Outbreaks)

One thing that computer simulations can't predict is human error. In the two cases of person-to-person transmission outside Africa (the Spanish nurse and second US patient), there might have been a breach in proper safety protocols.

"But these mistakes are very rare, and again this is not going to give rise to large outbreaks," says Vespignani. "Obviously what is happening in Liberia, Sierra Leone and Guinea is something that is of a totally different scale, with a healthcare system that we cannot even think of in our countries."

Vespignani is confident that the healthcare systems in Europe and North America are strong enough to stop outbreaks from ever reaching epidemic proportions, but says Asia is another matter. "If you ask me about India, China, other countries, then there are a lot of question marks."

Worse for the world

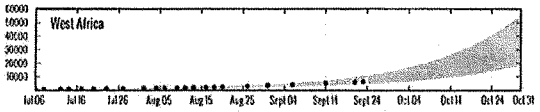
An Ebola epidemic in two countries with a combined population of 2.6 billion is not only terrifying, it further highlights the futility of attempting a travel ban. Could the US ban all flights from Asia and Africa? Where would it end, isolating the North American subcontinent from the rest of the world?

A travel ban is short-sighted, and would be ineffective in the long run. It's the epidemiological equivalent of an ostrich sticking its head in the sand: ignore the problem and hope it goes away.

And the Ebola epidemic isn't going anywhere. It's actually getting worse: the number of cases in West Africa continues to increase at an exponential rate.

Read: 4000 Deaths And Counting: The Ebola Epidemic In 4 Charts

Projections based on current trends using a dozen different models give future figures in the same ballpark: WHO predicts the total number will exceed 20,000 by 2 November, for example, while Vespignani's simulations say 18,100 to 55,400 cases by the end of October.



Projection for the total number of Ebola cases in West Africa by 31 October. Red circles are reported cases. Gray area is the range of projected cases, based on a worst-case scenario where the epidemic continues to grow exponentially. (Image: Alessandro Vespignani / www.mobs-lab.org)

According to a projection by the CDC, by late January 2015 there could be up to 1.4 million cases in West Africa alone.

War on Ebola

As Vespignani's computer simulations show, Ebola can easily spread across the globe. "This epidemic has pandemic potential," he warns. "What happens next year depends on what we are able to do in Africa. If we win this battle, it's okay. If we lose the battle there, then this thing is serious."

The only way to stop Ebola going truly global is to beat the epidemic in West Africa. Governments get this: the US is deploying 4000 troops to Liberia and the UK is sending 750 soldiers to Sierra Leone. Nonetheless, according to the NBC survey, over half (51%) of Americans disapprove of sending US troops to fight the spread of Ebola.

The survey also revealed that most Americans (72%) understand that the Ebola virus is transmitted via contact with bodily fluids, which suggests that health authorities like the CDC and WHO have successfully educated the public on how the disease spreads from person to person.

Calls for a travel ban illustrate that there's yet another battle to be won over Ebola: explaining how the disease spreads between populations.

Ebola in Four Charts

JV Chamary is a biologist and writer – read more of his stories on Forbes and follow him on Google+ and Twitter

Mr. MURPHY. Thank you.
And, Dr. Gold, you are recognized for 5 minutes.

STATEMENT OF JEFF GOLD

Mr. GOLD. Chairman Murphy, other members of the subcommittee, thank you so much for the opportunity to discuss the Ebola outbreak and the Nation's response, and how the Nation can maintain a state of readiness to respond to future highly infectious diseases.

I am Jeff Gold, and I have the honor as serving as Chancellor of the University of Nebraska Medical Center. My testimony today will focus on the challenges of dealing with Ebola, and our Nation's readiness to respond to highly infectious diseases.

This has been said many times earlier today, and well before, the United States is dealing with a serious public health crisis with the Ebola outbreak in Africa. It is a crisis that the United States has both the expertise to contain and to help resolve.

One of the most pressing goals to accomplish from the Ebola outbreak is how to best leverage the knowhow to train and to better prepare the Nation's healthcare system, to combat future highly infectious threats like Ebola here and around the world.

The University of Nebraska Medical Center is recognized as a national resource for our readiness to provide care for Ebola patients, and also our ability to provide training on Ebola and other highly infectious diseases. We have successfully treated Ebola now in two patients, and not in one. Most recently, passed away yesterday. We have provided consultations to many hospitals, clinics, emergency departments across the United States, including Bellevue Hospital in New York, on how to deal with therapies for patients who arrive in their hospitals, their emergency departments, et cetera.

Our readiness is based upon more than 9 years of preparation, protocol development, and team training to deal with highly infectious, deadly diseases. As a result, we are now responding to literally hundreds of hospital inquiries across the Nation, asking how to prepare if Ebola arrives in their community. Emory University Hospital is experiencing similar inquiries, and we are working closely together.

One step that we took to respond to the immediate national demand for information and training was to work with Apple Computer to convert our 9 years of protocols and procedures into easily accessible and completely downloadable multimedia materials and videos for healthcare providers. That was accomplished in 1 week, which is now available through Apple and through public media, and can be accessed on any personal computer, with well over thousands and thousands of physicians and members of the public who are downloading content specifically about personal protective equipment and others.

You might ask why Nebraska. Why is the bio-containment unit that we opened in 2005 in existence. This followed the 9/11 attacks. It was built upon concerns about Anthrax on congressional offices and SARS attacks. We recognize that the commonest of international travel increased the chance of global spread of highly infectious diseases. Our unit has written and rewritten protocols and

procedures, and collaborates consistently with national organizations and other medical centers. We rigorously train with local emergency responders, State emergency management, and military units through our relationships with STRATCOM and others. We spend a great deal of time considering the response plan if another highly infectious disease were to occur, and how this could be scaled.

The university is also a Department of Defense authorized university affiliated research center, which specializes in developing medical countermeasures to weapons on mass destruction, including highly infectious viruses. We have a history of conducting extensive research in these areas, including vaccines, antivirals, early detection, et cetera.

What has become obvious from this Ebola crisis is that a national readiness plan is absolutely necessary. Our bio-containment unit is one of four in the Nation. The capacity and the number of units in the Nation must be increased, and a national readiness plan that trains healthcare providers must be established. The number of actual beds is under 20, the number of usable beds is under 10, and I assure you that every unit such as ours will always maintain at least one bed if it is ever needed for a staff member that becomes ill. That immediately knocks the number down by four, five, or six.

The University of Nebraska Medical Center and Emory are working closely with the CDC and HHS on how training might be most effectively delivered. It must begin soon, and we have done so in advance of any funding considerations. As Congress considers funding, I urge that this include a number of items, and I will just read them by title as they are contained in my briefing documents. A national training in Ebola and highly infectious diseases, to develop a tier training system. Training should include setting up an accreditation program that independently nationally accredits organizations, emergency departments, et cetera, to establish and maintain their skill level of readiness. An annual maintenance of funding for increased role of existing bio-containment units to maintain their readiness. We have funded the readiness of our unit totally off of internal dollars up to this point. Funds to expand the number of treatment centers and existing bio-containment units, specifically, to increase bed and staff capacity within existing units, as well as new units. And finally, reimbursement for care for Ebola patients not covered by insurance.

Ladies and gentlemen, we have the expertise and knowhow to contain Ebola and other infectious threats, however, in order to do this, we must ensure that our Nation's healthcare professionals are adequately trained, properly equipped, and rigorously drilled.

I thank you so much for this privilege.

[The prepared statement of Mr. Gold follows:]

Statement of
Chancellor Jeff Gold, M.D.
University of Nebraska Medical Center, Omaha, Nebraska
before the Committee on Energy and Commerce
Subcommittee on Oversight & Investigations
Hearing on
"Update on U.S. Public health Response to Ebola Outbreak"
United States House of Representatives
113th Congress
November 18, 2014

Chairman Murphy, Ranking Member DeGette and members of the subcommittee, thank you for the opportunity to discuss the Ebola outbreak and the nation's response and how the nation can maintain a state of readiness to respond to future highly infectious diseases. I am Dr. Jeff Gold, Chancellor of the University of Nebraska Medical Center. My testimony today focuses on the challenge of dealing with Ebola and the nation's readiness to respond to highly infectious diseases.

The United States is dealing with a serious public health crisis with the Ebola outbreak in Africa. It is a crisis that the United States has the expertise and know-how to contain and help resolve. One of the most pressing questions facing our country is how best to leverage that know-how to ensure that our nation's health professionals and institutions are properly trained and ready to combat future Ebola and Ebola-like threats.

The University of Nebraska Medical Center (UNMC) and our hospital partner, Nebraska Medicine, have successfully treated Ebola patients. We have been recognized as a national resource for our readiness to provide care for Ebola patients and also our ability to provide training on Ebola and highly infectious diseases. The UNMC readiness is based upon more than nine years of preparation, protocol development and team training to deal with highly infectious deadly diseases. Hundreds of hospitals across the nation have contacted UNMC asking how to prepare their facilities and staff if Ebola arrives in their community. Emory University hospital is experiencing similar inquiries. University of Nebraska Medical Center and Emory University have been collaborating closely with the Centers for Disease Control and HHS on readiness and treatment.

One step UNMC took to respond to the immediate national demand for information and training was we worked with Apple to convert our nine years of protocols and procedures into easily accessible and completely downloadable multimedia materials and videos for health care providers. That was accomplished in one week. It is available from Apple iTunes, as well as on the UNMC website, and can be accessed from any personal computer or a smart phone at no cost. UNMC released a second version intended to help consumers understand Ebola. To access the materials, search "iTunes Nebraska Ebola Method" on any computer. This is helping address the immediate need for information. More than 1,300 clinicians have enrolled in the training and more than 6,000 have downloaded the UNMC YouTube video about personal protective equipment.

Also, UNMC has assisted in providing consultations for Bellevue Hospital in New York on how to deal with therapies, screening and isolation when they had a patient arrive at their hospital.

You might ask why Nebraska was thrust into the national spotlight. The UNMC Biocontainment Unit opened in 2005 following the 9-11 attacks, the 2001 Anthrax attacks on Congressional offices and other similar incidents, and the SARS outbreak in Canada in 2003. We recognized that with the commonness of international travel, it was possible that the global spread of a highly infectious disease was a possibility. Nebraska decided it needed to be ready to respond to deadly viruses. The UNMC Biocontainment Unit team has trained in our specially designed biocontainment unit for more than nine years. Our Unit has written protocols and procedures, and rigorously drilled with local emergency first responders, state emergency management and military units. UNMC has written protocols on decontamination procedures for facilities, ambulances, labs, and more. UNMC spent a lot of time considering the response plan if a community has to respond to a highly infectious disease. Our team was uniquely prepared to meet public health threats posed by Ebola and other infectious diseases and to share those best practices with our nation's hospital providers.

University of Nebraska is also a Department of Defense authorized University Affiliated Research Center which specializes in developing Medical Countermeasures to Weapons of Mass Destruction, including highly infectious viruses. We have a history of conducting research in this area and responding to requests from the military.

What has become obvious to those of us who treat Ebola patients is that a national readiness plan is absolutely necessary to prepare the nation's hospitals. If Ebola continues to escalate, or more importantly, if the nation faces a different highly infectious disease, the nation's healthcare system must be ready to respond.

The UNMC Biocontainment Unit is one of four such units in the nation. The number of treatment units in the nation must increase, but even more importantly a national readiness plan that trains healthcare providers in those units must be established.

This training will vary depending on the location of the hospital, its resources, and the risk factor of that hospital receiving a patient. The hospitals that are being considered as potential treatment centers will require much more intensive training than a smaller community hospital that may only need to be correctly trained in screening procedures, isolation procedures and use of protective clothing. The University of Nebraska Medical Center and Emory University are working with the CDC and HHS on how training might be most effectively delivered, but it must take place and begin soon.

The risk to the healthcare providers and members of the hospital community in dealing with patients who have Ebola demands urgency in launching a national training program. A key part of training is building the team that must rely on each other to safely deliver the treatment to patients. The training of hospital personnel must include everything, such as addressing special facility needs and special lab needs, and the training must have a particular focus on the management of waste and consumables that must be decontaminated before they leave a biocontainment unit.

As Congress considers the Emergency Supplement, I urge that it include provisions to establish a national training program and a national readiness strategy, preferably managed by the front line existing Biocontainment Units, like UNMC and Emory that have the experience that providers are relying on for information.

National Training in Ebola and Highly Infectious Diseases
Developing a tiered training program for U.S. hospitals is important to preparing the nation for whatever comes after Ebola. Those hospitals will need to be trained and maintain their skill levels. Rigorous training is a vital part of readiness. UNMC is a key contributor to that training. Hundreds of hospitals have contacted UNMC asking for assistance and guidance. More than 30 hospitals have asked to come to Omaha to be trained by UNMC. UNMC trained Johns Hopkins at UNMC two weeks ago and UNMC is essentially serving as a consultant to Hopkins as they prepare to build a biocontainment unit. UNMC and Emory are collaborating to develop a common curriculum that could be used with CDC to train the future designated treatment hospitals.

A National Ebola Training Center is part of the Supplemental funding request. UNMC and Emory have been working with CDC and HHS to develop the training. It needs to be funded.

Training Should Include Setting Up an Accreditation Program
UNMC firmly advocates that an independent national accreditation program be created as a way to ensure that hospitals that are trained, maintain their level of readiness. UNMC has set up national independent accreditation programs for other specialties and could easily set up this one if funds are provided.

Annual Maintenance Funding for UNMC Biocontainment Unit
CDC has provided an annual maintenance funds for the unit at Emory. I am aware that in recent years Emory's annual funding has been reduced substantially. UNMC has never received similar annual funding. With the increased services and resources UNMC and Emory are providing and will continue to provide, both institutions should be on contracts as we collaborate with the agencies to develop and implement the national training of other hospitals.

Funds to Expand Number of Treatment Centers and Existing Biocontainment Units
Funds will be needed to increase the number of treatment centers and increase the capacity to respond to Ebola or a future highly infectious disease outbreak. HHS asked UNMC to expand our facility. To do so, UNMC will need construction funds and equipment funds to increase our capacity. UNMC built its Biocontainment Unit with University and Hospital funds and federal funds contributed by the State of Nebraska. UNMC has existing contingent plans to expand if needed, but it would require federal funds. It would be helpful if Congress would include language to specify that existing biocontainment units leading the treatment and training be granted priority capital construction funding.

Reimbursement for Ebola Patients Costs Not Covered by Insurance
Treating an Ebola patient is very costly and consumes an enormous amount of staff time and consumables. At UNMC, it has cost around $1.16 million to treat the two patients directed to us

by the federal government. Treatment costs vary based on the severity of the patient when they arrive, but the cost is well beyond the normal costs incurred for an intensive care patient. In addition to the direct costs, we also take additional beds in the ward out of service when an Ebola patient is being treated which is a direct financial cost to the hospital. We estimate having to take those additional beds out of service has cost $148,000 so far.

I urge Congress to approve funding and policies supporting full reimbursement of the cost of care for these unique cases that are not recoverable from insurance policies. These are patients that federal government directed to UNMC and Emory. A mechanism to provide payment for the unpaid portions of the treatment seems fair.

Guaranteeing financial sustainability for UNMC, Emory and future regional centers that may be designated to care for Ebola virus disease cases is critical to containing any future outbreak of an infectious disease. As I mentioned, caring for patients with Ebola virus disease requires additional staff and resources, far beyond usual care.

Last, I wish to briefly share a few key lessons that UNMC and Nebraska Medicine have learned through our experience by being on the front line of this war against Ebola:

- Patients and their families come first – whether that involves the provision of care, protecting their privacy or gaining permission to conduct experimental research.
- Caregivers cannot become distracted due to the special national attention placed on these patients. The national attention is, however, critically important in communicating in an accurate and timely way with our global community.
- Teamwork is essential for caregivers. Putting one's life in the hands of well trained, interdisciplinary, and passionate experts is essential.
- Safety is paramount. Rigorous study of and compliance with constantly emerging protocols of care are mandatory.
- Promoting a culture of quality that is equal to the risk undertaken is expected of every individual team member. Training, seeking new knowledge continuously produced in real time, and appropriately questioning decisions must be routine.
- Providing accurate and timely information to our colleagues in the health professional community and the public is essential.
- Conducting research and sharing findings in a timely fashion is imperative. New discoveries in the treatment and management of the disease as well as information in such areas as patient triage, waste management and patient transportation are critical to combating the disease and preventing its spread.
- Advancing community understanding about the disease is an important and often overlooked service – especially in non-English speaking neighborhoods. Continuous messaging is essential in combating rumors and allaying unrealistic fears.

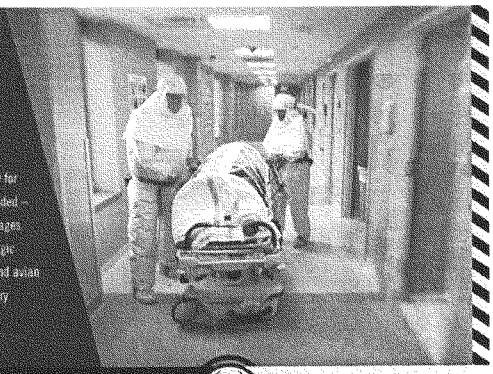
- Special attention must be placed on caring for the health of caregivers – especially mental health. Normal conditions of stress are intensified in this setting.
- Transparency, accuracy, and timeliness of sharing information are critical factors in working with media, who are important allies in creating accurate and realistic narratives about the disease and its victims.
- The current resources available within the United States to care for patients being repatriated with a specific infections diagnosis or diagnosed within the United States are extremely limited and need to be scalable with sustained expertise and maintenance of quality facilities.
- Mechanisms for support of the maintenance of this expertise and specifically for the care of suspected or diagnosed cases are currently not available and need to be addressed.

We have the expertise and know-how to contain Ebola and other infectious disease threats. However, in order to do this we must ensure that our nation's health care professionals are adequately trained, properly equipped, and rigorously drilled. America's academic health centers, along with our federal, state and local government allies, must work collaboratively to ensure that proper treatment protocols and procedures are widely proliferated. Our team of biocontainment professionals at UNMC and Nebraska Medicine are uniquely prepared to answer this call in the fight against Ebola and other infectious diseases.

I have attached for your reference a copy of the UNMC Biocontainment Patient Care Unit brochure.

Thank you for the opportunity to comment.

THE NEBRASKA MEDICAL CENTER



Providing care for patients with highly contagious diseases, the biocontainment unit is an environment that maximizes the safety for staff and the community at large. A full spectrum of care is provided – from quarantine to intensive care treatment – for patients of all ages. The unit is designed to handle infections such as viral hemorrhagic fevers (eg, Ebola virus), as well as smallpox, SARS, monkeypox and avian influenza, whether acquired in a bioterrorist attack, in a laboratory accident or as a naturally occurring infection.

The threat of *bioterrorism* in the United States is very real.

Nebraska is prepared.

The Nebraska Biocontainment Patient Care Unit is a collaborative project involving Nebraska Department of Health and Human Services, The Nebraska Medical Center and University of Nebraska Medical Center. It is one of only a few biocontainment patient care units in the United States and is the largest with a 10-bed capacity. In addition to providing medical care for patients with hazardous diseases, the unit also has active research and outreach training programs for the region.

Unit personnel consist of a highly trained staff of physicians, nurses, techs, infection preventionists and respiratory therapists who have special training in disaster management, cardiac life support and bioterrorism. They work full-time in other areas of The Nebraska Medical Center but remain on call to report to the unit promptly.

The Nebraska Biocontainment Patient Care Unit was dedicated by Julie Gerberding, MD of the Centers for Disease Control and Prevention in 2005. In the event of a public health threat, the unit may be activated by Nebraska Department of Health and Human Services and the NBU medical director.

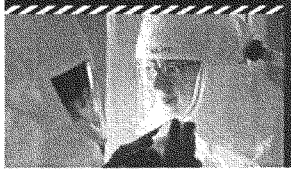
THE NEBRASKA BIOCONTAINMENT PATIENT CARE UNIT IS THE LARGEST BIOCONTAINMENT PATIENT CARE UNIT IN THE UNITED STATES.

EQUIPMENT AND CAPABILITIES

The Nebraska Biocontainment Patient Care Unit is a secured area with a self-contained, negative-pressure airflow system.

Other features include:

- Negative air flow with greater than 15 air exchanges per hour
- High Efficiency Particulate Air (HEPA) filtration system
- Secured access, double door air lock main entrance
- Separate staff entrances and exits
- Staff decontamination shower
- Pass-through sterilizer to disinfect materials leaving the unit
- Dunk tank to decontaminate full specimens leaving the unit
- Video phone for patient communication
- Close proximity to the Nebraska Public Health Laboratory (NPHL) BSL III Lab
- HEPA patient transport system allows for safe transport of patients to the unit



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NEBRASKA BIOCONTAINMENT PATIENT CARE UNIT

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SERIOUS MEDICINE. EXTRAORDINARY CARE.

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Mr. MURPHY. Thank you, Dr. Gold.
Now, Dr. Lakey.

STATEMENT OF DAVID LAKEY

Mr. LAKEY. Thank you, Chairman Murphy, and members. For the record, my name is David Lakey, the Commissioner of the Texas Department of State Health Services, and I have been in that role now for 8 years. This last month has been one of my most trying and tough months as the Commissioner of the Department of State Health Services.

On September 30, 2014, the Texas State Public Health Laboratory, a laboratory response network laboratory, diagnosed the first case of Ebola in the United States. The diagnosis of Mr. Duncan with Ebola set in motion a process we in public health refine through continued use, tried and true public health protocols, including identifying those individuals that have had contact with people that have been infected, making sure that they are monitored, providing care to those that have been infected, isolating those individuals, and when needed, using quarantine.

The magnitude of the situation really was unprecedented. While Mr. Duncan was one man, staying in one city, in one State in the country, the outcomes associated with his case could impact the whole State and possibly other parts of the United States.

We at the Department of State Health Services, along with our colleagues in Dallas and our colleagues at the Center for Disease Control and Prevention took the responsibility to contain the spread of this disease very seriously. We organized a local incident command structure to handle the event, and at a State level, we activated our emergency response management centers. While our core mission was simple in concept; to protect the public's health by limiting the number of people exposed to the virus, the challenges associated with carrying out that mission were numerous.

The care of Mr. Duncan presented its own challenges. Identifying the first person in the United States infected with this disease, the infection control challenges, waste management and transportation, the availability of experimental treatments and vaccines, training for healthcare workers on the higher standards of infection control, and personal protective equipment guidance and supplies. And when Mr. Duncan regretfully passed away, we handled issues related to caring of his human remains, which remained highly infectious with Ebola for months after death. Unfortunately, during the care of Mr. Duncan, two nurses became infected. Nurses who had put their lives and their careers on the line to take care of Mr. Duncan and to protect the public's health.

Concerns relating to the handling of these three Ebola patients included questions about decontaminating their homes, their automobiles, decisions about how to handle their personal effects, the monitoring of pets, and patient transportation issues, and addressing the public's concerns. Identifying potential contacts, and locating them and monitoring those individuals had some risk of exposure that also involved many challenges. Decisions about who to quarantine and what level of quarantine, balancing public health and an individual's rights, providing accommodations for those confined to one location for the 21-day monitoring period, quickly proc-

essing control orders, coordinating two symptom checks a day for each person under monitoring, and managing the transportation and the testing of laboratory specimens.

Throughout all of these specific challenges, our experience in Dallas exemplified common requirements for successful responses to emergency situations. Having clear roles and responsibilities among the various Government agencies and entities that are involved, strong lines of communication, and an incident command structure staffed by trained emergency management and public health professionals to ensure the response's cohesive direction. It really requires a partnership at all levels of Government, and throughout State and Federal Government.

The outcome in Dallas proved the strength of the public health's process. Hundreds of people were monitored in the State. Two cases of Ebola resulted from the direct care of the index case, and they were detected early in the disease onset, and they recovered. No cases resulted from community exposure.

At this time, like other States, Texas is providing active monitoring for individuals who arrive in the United States from one of the outbreak countries. Texas has monitored approximately 80 individuals under the airport screening process. Texas is also, like other States, working to ensure that capacity exists in the State to care for patients with high consequence infectious diseases like Ebola. Two centers currently are able to stand up on a short notice to receive a patient, and Texas is working to identify additional capacity within our State.

As Ebola screening and monitoring transitions into our routine processes, our focus in Texas is now shifting to include complete evaluation of the response in Dallas, and a discussion of how to improve the public's health response system in Texas as a whole, and sharing our experiences and our lessons learned nationwide.

Governor Perry has put together a task force for infectious disease preparedness and response to evaluate the Texas system, and to make recommendations for improvement. We take that extremely seriously. I believe this discussion among Governmental and nongovernmental individuals, among varied stakeholders, and including experts in pertinent fields will result in a Texas and the Nation being better prepared to handle the next event.

While we do not know what form the next event will take, we do know that there will be another event. As I tell my colleagues at the State and national level, it is my expectation that, as the Commissioner of Health, that I am going to have to manage one major disaster each and every year. One unthinkable event per year. And that is why the funding that is provided to States through the Hospital Preparedness Program, in fact, is very important to what we do, and that partnership is really critical.

And finally, I want to thank my colleagues at both the Dallas County Health Department and the Center for Disease Control for their work and their support, and this really was a team effort.

Thank you, sir.

[The prepared statement of Mr. Lakey follows:]

Dr. David Lakey
Commissioner
Texas Department of State Health Services
November 17, 2014
U.S. House Committee on Energy and Commerce
Update to the U.S. Public Health Response to the Ebola Outbreak

Introduction

On September 30, 2014, the Department of State Health Services (DSHS) Laboratory and Centers for Disease Control and Prevention (CDC) tested a specimen for Ebola virus, and found it positive. Mr. Thomas Duncan was the first Ebola patient to be diagnosed in the country; he passed away on October 8, 2014. Two secondary cases of Ebola occurred in nurses who directly cared for Mr. Duncan, and both nurses are now recovered. From September 30, 2014, to November 7, 2014, Texas public health monitored 177 individuals who had varying risks of exposure to the virus, and additional individuals were monitored due to potential exposure on two airplane flights. No secondary cases resulted from community exposure. The strengths of the public health system allowed Texas to contain the spread of Ebola in Dallas – state, local and federal partners working collaboratively with a single purpose, to protect the health of Texans.

Conclusion of this event now allows a systematic review of response efforts to take place. In Texas, this will occur through an after action review process, which engages input from local, state, and federal responders who were part of the effort, and analyzes each part of the response. The assessment will determine what worked, what can be improved, and how those improvements can be made. The final result will be enhanced preparedness plans for future infectious disease events.

Although this assessment is ongoing, certain themes are emerging that speak to the need for a broader conversation about the nation's public health response capacity for infectious disease. The Ebola outbreak in West Africa continues to pose a risk worldwide. Other diseases with risk of importation to the United States require a stable, robust public health infrastructure: extremely drug resistant Tuberculosis; measles; dengue fever; SARS (severe acute respiratory syndrome); Middle East Respiratory Syndrome (MERS); Lassa fever; and highly pathogenic influenza.

Infectious Disease Surveillance in Texas

For purposes of public health, the State of Texas is divided into eight health service regions. In areas where a local health department exists, DSHS health service regional offices provide supplemental or supporting public health services. In areas where there is no local health department or local health authority, DSHS health service regional offices act as the local health authority and may provide core public health services.

Local health departments are of varying size, resources, and capacities. While some health departments support a full array of services, others have more limited functions. Approximately

60 health departments in Texas are "full service," while 80 offer fewer services. DSHS' role is to fill in, as needed, core public health services not offered at the local level.

For infectious disease, DSHS health service regions ensure that disease surveillance occurs in every Texas county through the continual and systematic collection, analysis, and interpretation of health data. This effort is dependent on disease reporting by providers, which is required by law. Currently, in Texas, over 60 conditions are subject to mandatory reporting, including: foodborne, vector-borne, respiratory, and sexually transmitted diseases. Viral Hemorrhagic Fever, including Ebola, is an immediately-reportable disease in Texas.

In order to allow real-time monitoring of disease surveillance data, the Centers for Disease Control and Prevention (CDC) provides and maintains the National Electronic Disease Surveillance Network (NEDSS) for use by local, regional and state health departments. NEDSS is used by nearly every local health department in the state, and allows DSHS to identify unusual increases or pattern shifts in disease numbers.

In concert with NEDSS, Electronic Laboratory Reporting (ELR) has improved the timeliness and comprehensiveness of diseases reporting. ELR electronically links laboratory test reports to NEDSS, allowing immediate access by DSHS or the local health department with legal jurisdiction.

Infectious Disease Investigation and Response in Texas

Timely disease reporting to the public health system is imperative for quick mobilization of public health investigation and response efforts. Since Texas is a home rule state, epidemiological investigations begin at the local level, unless there is no local health department. While local entities have the statutory responsibility to lead infectious disease investigations, state and CDC guidance is available and widely used.

More complicated or widespread events can increase the state and federal roles. If an outbreak involves multiple jurisdictions, the state role becomes more prominent. If, at any time, an investigation goes beyond local capabilities, the state may take the lead. In turn, if an investigation exceeds state resources, the state may ask the CDC for assistance. Additionally, the CDC leads multi-state investigations. No matter the level of outbreak, the expectation is for all three levels of government to work in cooperation, with varying levels of state and federal involvement depending on the size and type of infectious disease event, and the resources and expertise of the local entity.

Support provided by the state and CDC can include a number of options, depending on the scope of an investigation and local needs. This support might consist of subject matter expertise and onsite assistance; state or CDC laboratory testing; provision of personal protection equipment; or mobilizing of DSHS Rapid Assessment Teams or CDC Epi-Aids. The state and CDC can also assist with administering questionnaires and interviews to cases and potential contacts, inspecting relevant hospital facilities or restaurants, and helping examine pertinent records.

In cases of large-scale outbreaks, an incident command structure may be activated at the local and state levels. DSHS maintains the State Medical Operations Center (SMOC), which is the medical arm of Texas' emergency operations command and control facility, the State Operations Center (SOC). The SMOC's function is to ease the flow of information among multiple jurisdictions, provide dependable tracking of events, and facilitate requests for resources and supplies from local jurisdictions.

Successful Infectious Disease Response in Texas

The public health response system in Texas, led by local entities and supported by state and federal government, has a long history of successful outbreak responses. Texas has effectively contained events involving disease like Tuberculosis, measles, hepatitis, and salmonella.

While the Ebola response was ongoing in Dallas, DSHS disease investigators were concurrently involved in an infectious disease outbreak of a much wider scale. In concert with the local health authority in El Paso, Texas, DSHS tracked a number of exposures to Tuberculosis (TB) that occurred through a health care worker in the labor and delivery unit of a local hospital. This situation is a prime example of how, under the current system, all levels of government successfully work together to respond to an infectious disease event.

Once the index case was identified, local and state health department investigators meticulously examined hospital records to determine infants, parents, coworkers, and volunteers who were at risk of exposure. This investigation identified an initial 3,227 potentially-exposed newborns, and 69 potentially-exposed health care workers. Together, public health workers evaluated the index case's history to determine where exposure may have actually occurred. Then, they prioritized potential contacts by level of risk, decided on a contact investigation protocol specific to this incident, and executed the contact investigation. The CDC provided on-site assistance, and home office CDC staff provided expertise and advice. International coordination took place due to the city's proximity to the U.S.-Mexico Border; interstate coordination with New Mexico was also necessary.

Public health investigators were able to narrow down the initial 3,227 number to 940 exposure contacts: 860 infants, 69 healthcare workers, and 11 community contacts. Of these exposures, four babies and four adults were positive for TB infection. Appropriate public health follow-up and treatment recommendations are underway for all eight.

Public Health Emergency Preparedness Funds and Hospital Preparedness in Texas

Texas experiences several challenges in public health and health care preparedness planning. The state's large size and population, diverse geography, weather patterns, coastal area, and border proximity necessitate coordinated preparedness planning. Historically, Texas has had more federal disaster declarations than any other state, with 88 major disaster declarations between 1953 and 2013. These declarations have included floods, hurricanes, tropical storms, tornadoes, droughts, wildfires, and explosions.

These challenges have necessitated a strong focus on preparedness planning for the state. Emergency planning in Texas takes an all-hazards approach to preparedness and response, which includes natural events, biological events, hazardous material spills, radiological accidents, terrorist acts, and others. Each type of incident requires development of response plans, periodic training, and continuous improvement.

Two key federal funding streams support Texas activities in this area: the U.S. Health and Human Services (HHS) Hospital Preparedness Program (HPP), which is administered by the Office of the Assistant Secretary for Preparedness and Response (ASPR), and the Centers for Disease Control and Prevention (CDC) Public Health Emergency Preparedness (PHEP) program. The HPP provides resources to help hospitals and healthcare stakeholders prepare for and respond to bioterrorism and medical emergencies with a primary focus on coalition building. PHEP funds are used to increase state, regional, and local public health capacity for a flexible, all-hazards approach to emergency preparedness.

HPP and PHEP funds have allowed Texas to successfully respond to a broad array of incidents over the years. Since 2008, Texas has carried out effective response efforts in natural events like Hurricane Ike and Dolly, as well as the Bastrop wildfires; disasters like the West, Texas Fertilizer explosion; disease outbreaks including West Nile Virus, the H1N1 pandemic, Tuberculosis, Salmonella, and cyclospora; and other events like the Yearning for Zion Ranch compound.

The trends in funding for these preparedness activities are aligned with the major events of the time. The attack on the World Trade Center on 9/11 infused the system with support. Avian influenza in 2007 and H1N1 in 2010 resulted in additional support. However, since that time, HPP awards to Texas has consistently decreased from $33.3 million in fiscal year 2004 to an anticipated $15.8 million in fiscal year 2015. PHEP awards to Texas have similarly declined since 2002, a situation that does not allow Texas to fully keep up with rising costs and the need to continually prepare. Consistency at sustainable levels would better allow states to prudently plan preparedness and response activities.

Lessons Learned: Ebola and Infectious Disease

As with every response, the events in Dallas have provided lessons that must inform future preparedness and response activities. The lessons are augmented by experiences in other states that have received patients, managed potential contacts, and are trying to plan for the possibility of an Ebola suspect or known case within their jurisdiction.

Certain lessons were immediately apparent in Dallas, and confirmed previous knowledge. The crux of infectious disease response is reporting. Providers must be aware of what diseases are reportable to their local health department, and promptly report contagious disease through the reporting system. Provider awareness of this responsibility allows for more effective disease surveillance, and more timely response to developing infectious disease events.

Secondly, the Ebola cases in Dallas highlighted the need for providers to vigilantly take travel histories, and streamline sharing of this information while a patient is being diagnosed.

Providers must be aware of outbreaks worldwide, to inform their consideration of patient travel history. Until the Ebola outbreak in West Africa is over, Ebola must be a differential diagnosis for those who have recently traveled from one of the outbreak countries. At the same time, moving forward, providers must be aware of what other outbreaks are occurring internationally.

Other lessons were arrived at through the provision of care for a late-stage Ebola patient. Two months ago, the national strategy was that any community hospital should be able to care for an Ebola patient. Treating Mr. Duncan shows how labor intensive care for a patient with Ebola is, the meticulous detail required to avoid secondary infections, and the amount of resources needed to prevent the spread of virus. Now, it is apparent that a nationwide network of predefined infectious disease treatment centers is needed for the care of patients with high consequence infectious diseases like Ebola. These treatment facilities must have a care team identified and carefully trained; a comprehensive plan for care, laboratory testing, waste disposal, patient transport; and mortuary services; pre-stocked medicines and post exposure prophylaxis (PEP); and a sufficient supply of personal protective equipment (PPE). In Texas, two facilities are prepared to treat patients with Ebola under short notice, and additional capacity is being identified.

The care of Ebola patients also informed the need to modify PPE and other Ebola-related guidelines. The overall lesson is that guidelines must be consistently reviewed and updated to ensure the smooth and safe care of infectious disease suspect and known cases, from beginning to end. Additionally, access to experimental therapeutics and PEP must be expedited and more flexible, and there must be an intensified focus on testing and producing Ebola vaccine and treatment drugs.

The epidemiological process of identifying, isolating, and diagnosing individuals for Ebola revealed its own lessons. The Lab Response Network (LRN), which receives support through PHEP funds, has been critical. The Texas State Public Health Laboratory is part of the LRN and had fortunately become certified to test for Ebola just before Mr. Duncan was identified as a possible Ebola case. The LRN must be robust nationwide to ensure that testing capacity adequately covers the nation.

A number of lessons have arisen with regard to monitoring and potential quarantine of numerous individuals. The language surrounding this process and the correlation between risk and public health action must be clearly delineated. This precision will help provide the public assurance that decisions are based on science, and to provide public health and government officials clear information by which to make decisions about contact monitoring and quarantine. Moreover, government action regarding voluntary compliance guidelines and mandatory quarantine orders must occur in a manner that respects individual freedoms, and ensures necessary supports are provided to individuals who are asked to refrain from entering public venues. Concerns over employment, education, transportation, housing, and simple household issues such as groceries impact the willingness of individuals to comply with voluntary and mandated quarantine orders. Challenges have also emerged as asymptomatic persons under monitoring seek medical treatment for issues unrelated to Ebola, as public health looked for housing for individuals of quarantine, and officials negotiated waste management issues requiring coordination among multiple agencies.

Finally, the efforts of Texas and other states to prepare for the potential of an Ebola suspect or known case inform potential improvements for infectious disease response. Hospital, local, and state ability to access PPE supplies has become problematic. There is a gap in knowledge about what hospitals should have on hand and how to proceed if they are unable to purchase appropriate PPE. For states, a challenge exists in stockpiling and warehousing adequate PPE to be able to respond to surge situations, while ensuring that caches are on a rotation basis to avoid PPE expiration without use. Furthermore, while guidelines regarding airport screening and travel have been an area of focus, there appears to be a need to further refine maritime guidelines.

Identified Issues: All Hazards Events

The Dallas response exhibited particular needs associated with a biological event like Ebola. A response to a natural disaster involves mobilizing resources, managing finite supplies, transporting equipment and personnel, and providing established medical and social care. On the other hand, biological events like the Ebola response have fundamentally different characteristics from other emergency events. In Dallas, a greater focus was on less tangible activities, including: patient screening and isolation; epidemiological surveillance; management and sharing of epidemiological data; expert medical and public health decision making; legal resources, and coordination of multiple jurisdictions and agencies.

Despite these differences, all types of emergency response events require a level of training, communication, and leadership that is universal. The incident command structure (ICS) is a tool that brings public health, law enforcement, emergency management, and other essential functions together into a coordinated response effort. The incident command structure also helps ensure that three levels of government work together seamlessly, provides overall direction for the response effort, and ensures clear and accurate communication with the public. The ICS is essential, and must be consistently practiced in order to ensure effective execution in the event of an emergency response.

The ICS should integrate each participant into its structure, so that there is a clearly-delineated chain of command, and no question about the role of each jurisdiction. Defined roles and responsibilities for each individual within the ICS ensure that multijurisdictional responses work with a shared vision and purpose, and help avoid potential cross-agency issues. These structural decisions, however, must be largely outlined before a response occurs. Tabletop and active exercises allow emergency management and public health planners to simulate these crucial decisions, and be more effective when an emergency becomes a reality.

Throughout a response, quality improvement must be a priority. Within the ICS, at least one individual should be designated to record events and identify issues that should be looked at more deeply once the response comes to an end. Only by beginning the learning process during a response will jurisdictions be able to maximize after action processes that inform better response in the future.

Conclusion

The response to Ebola in Dallas, Texas, exhibited the strength of public health processes. No secondary cases of Ebola resulted from community exposure. The two secondary cases that occurred were associated with direct care by health care workers of an Ebola patient. Quick identification of these cases allowed more immediate care, fast isolation of the patients, and a better chance for successful health outcomes.

At the same time, every response effort brings to light what processes can be improved. Conclusion of this event now allows a systematic review of the response effort in Dallas. In addition, Texas Governor Rick Perry has formed a Texas Task Force on Infectious Disease Preparedness and Response, the purpose of which is to assess and enhance the state's capabilities to respond to outbreak situations. The task force is composed of 17 members, headed by infectious disease and Ebola experts, and will be supported by DSHS and other state agencies. The Task Force will evaluate infectious disease response in Texas, and determine what recommendations can be made for improvements, either through agency or legislative action.

It is evident from a long history of success that public health interventions work, and that infectious disease investigation and follow up can stop the spread of disease. In Texas, the focus is on continued active monitoring of travelers from outbreak countries, and on improving plans for future infectious disease response in the state.

Mr. MURPHY. Thank you.

Dr. Gold, I know you have some travel plans. We have about 20 minutes of questions, will you be able to accommodate that?

Mr. GOLD. Yes, sir, whatever your needs are.

Mr. MURPHY. Thank you very much. Appreciate that.

And I will recognize myself for 5 minutes.

Dr. Gold, you mentioned a number of comments about what needs to be done with the administration's request for funding. I don't know if you have had a chance to read it. Have you?

Mr. GOLD. At least in general terms, yes.

Mr. MURPHY. OK. So would you know whether or not there is an adequate plan to support the request yet? I don't want to put you on the spot.

Mr. GOLD. I don't think the granularity is in the written materials that have been provided.

Mr. MURPHY. Would you do us a favor, as someone at a hospital dealing with this, could you make sure you get to the committee's specific recommendations? In fact, I would ask that all the panelists who have all dealt with this, that would be very, very helpful to have that kind of granularity.

Mr. GOLD. Yes.

Mr. MURPHY. Thank you.

Dr. Isaacs, you have been to Africa.

Mr. ISAACS. Excuse me?

Mr. MURPHY. You have been to Africa?

Mr. ISAACS. Yes, a lot of times.

Mr. MURPHY. The CDC has guidelines for health monitoring and movement for healthcare workers who have been treating Ebola patients in Africa. Now, they classify as some risk those professionals who have had direct contact with a person sick with Ebola while wearing personal protective equipment.

You have cited that some people wearing personal protective equipment have still——

Mr. ISAACS. Yes.

Mr. MURPHY [continuing]. Contracted Ebola.

Mr. ISAACS. Yes, it is an obvious fact, yes.

Mr. MURPHY. So these some risk individuals have no mandatory restrictions on travel or public activities, in fact, there is no requirement for returning healthcare workers to self-isolate or avoid public transportation, like subways, bowling alleys, et cetera. I might want to add, we have done a survey of Members on this side and every single Member who asked hospitals in their district has returned comments saying that all those hospitals said for those first 21 days, those healthcare workers are not going near a patient. They will be furloughed, they are to stay home, take their temperature multiple times a day.

Does Samaritan's Purse healthcare workers follow guidelines such as this when they return?

Mr. ISAACS. Yes, we have actually written our own protocols and guidelines back in late July when Dr. Kent Bradley, who has testified here, was coming back. We were bringing out about 40 people. We contacted CDC and asked them what their protocols were and, frankly, they told us just to have our staff check their temperature twice a day, and if they got a fever, go to the local health depart-

ment. We didn't feel that that was adequate because we had just come through a very serious bout with Ebola, and I think we probably had a more realistic encounter with it than perhaps other people had, and so we created our own protocols.

We check our staff through direct monitoring every day, four times a day. We have a little bit lower threshold, and we do keep them in a restricted movement, no touch kind of protocol for 21 days.

Mr. MURPHY. So you are saying that your protocol goes beyond the CDC recommendations.

Mr. ISAACS. There is no question our protocol goes beyond the CDC.

Mr. MURPHY. Well, CDC says that is not necessary. Do you agree?

Mr. ISAACS. Well, you know, all I can say, I mean there was a question a minute ago about CDC, you know, disregarding what we were saying. CDC is a large organization. They create a policy. So if you call them and say, well, we think we ought to do this, they say, well, that is not our policy, and then they don't engage any further. That is just the reality that we have run into, and I don't mean any disrespect to CDC, I am very appreciative of them, but for us, we live in a small town, so our national headquarters is in a town with 40,000 people. What we have run into is that the spouses of some of our returning staff don't want them coming home. The returning staff don't want to be around their children. And we don't want to spook everybody in our community.

Mr. MURPHY. So you are erring on the side of extra safety?

Mr. ISAACS. Yes, sir, we are.

Mr. MURPHY. Let me ask another thing. This has to do with discussions I have had with Franklin Graham——

Mr. ISAACS. Um-hum.

Mr. MURPHY [continuing]. Son of Billy Graham, and highly respected individuals here, but listed that there are some problems for people, the NGOs, the charitable workers, et cetera, as well as Government workers traveling back and forth to Western Africa. Is that a fact that there are difficulties with travel?

Mr. ISAACS. I think that is one of the greatest vulnerabilities that the United States has to fight the disease in West Africa. There is not a dedicated humanitarian bridge. What has happened, I mean there has been a lot of talk about, well, a 21-day waiting period would make it onerous for volunteers and they wouldn't go. I will tell you what will make it very onerous is for volunteers not to have an assurance that they can get a flight out. I promise you they will not go.

Mr. MURPHY. How many airlines can currently fly in and out of Western Africa? I heard it is like Sabrina Air and——

Mr. ISAACS. Well, I think it is 150 or 200 a week, according to what he was saying. That is general population. I don't know how many relief workers.

Mr. MURPHY. But we don't have a bridge for the relief workers.

Mr. ISAACS. There are two airlines that fly in and out of Liberia. One is Brussels Air, and by the way, when you get off in Brussels, you just walk, you can go anywhere, you are not monitored for anything. And the second one is Air Maroc—Royal Air Maroc. If they

should decide it is not in their commercial interest to continue flying into Monrovia, then there will become an effective commercial quarantine on Liberia, then what is the backup plan?

Mr. MURPHY. Plus, as I understand it, getting supplies to West Africa is a huge problem. We understand that twice they had to lease planes.

Mr. ISAACS. We had to have two 747s——

Mr. MURPHY. At a cost of?

Mr. ISAACS. About $460,000 a piece, and each one can take about 85 tons. And for cargo logistics in and out. For people, I think we have a great vulnerability there. There is one organization that is flying like a nonprofit. They have done four flights. That is great, but that is not enough.

Mr. MURPHY. So let me make sure I understand, what you would recommend is that the United States Government could help sponsor a charter flight twice a week from the United States to Africa, from Africa to the United States, so that Government workers, volunteers, NGOs, et cetera, would have a clear bridge, in which case they could be tested before they get on the flight, tested during the flight, tested when they land at one point in the United States, would simplify this whole process. Am I correct?

Mr. ISAACS. I 100 percent support the concept of a dedicated humanitarian air bridge from the United States directly to West Africa. Now, there would be 1,000 details to work out, but we have a vulnerability. If Brussels Air stops flying for their commercial reasons, we will have no air access.

Mr. MURPHY. Thank you.

I am out of time. I yield to Mr. Green for 5 minutes.

Mr. GREEN. Thank you, Mr. Chairman. And I thank our panel for waiting today.

And to follow up, I think that it would also be more certainty because instead of, like you said, going to Brussels or somewhere else, and just walking around, it would be the testing, and I assume these healthcare workers would love to have that because, like you said, they don't want to infect their own families.

Dr. Lakey, let me thank you, because I know in October, there were a lot of—seemed like unusual statements being made about Ebola, but when the State of Texas made the decision on how you would develop the protocols right after that, I appreciate that because it really sounded like everybody was getting back to normal and saying, "OK, this is an illness, we are going to deal with it, and this is how we can do it." So I appreciate the State doing that, but let me go on with some questions.

Dr. Gold, one of the interests I have, and I said earlier, is that how did the University of Nebraska develop this facility? I think it was opened in '05, and was it a combination of State, local, university funds, Federal, to develop the largest containment lab in the country?

Mr. GOLD. Thank you. The unit was opened in 2005. It was planned shortly after the 9/11 events, the anthrax scares, and it was done predominantly on university funds, to some small extent on State funds, and I believe there were some Federal Department of Defense dollars involved in the planning as well. However, very importantly, the maintenance of the staff, which costs us approxi-

mately between ¼ and ⅓ million dollars a year to maintain the preparedness, has been totally borne by the university and the medical center.

Mr. GREEN. Well, I appreciate that leadership, and I am just surprised that no other university would take that lead, and I appreciate Nebraska doing that. Now, my colleagues, both Congressman Terry and Joe Barton, know my daughter is there and she was recruited to come up there in '09, and I appreciate—well, and although when she told me back in the '90s she wanted to be an infectious disease doctor, I said I don't want you to treat me for anything you know about. But she is like most medical professionals. That is her job. And we want to make sure we protect them to do that.

But Nebraska center now has treated several patients, and what is the spending that is required to prepare the hospital to treat an Ebola patient?

Mr. GOLD. The direct costs that we have experienced, and we have compared notes pretty closely with Emory and we are not far apart, is approximately $30,000 per day for each patient admitted. The average length of stay, I guess it went down over the weekend a good deal, but for the two patients that went home, was 18 days——

Mr. GREEN. Yes.

Mr. GOLD [continuing]. And they were both treated in the relatively early stages of their disease. And that is the direct cost of equipment, supplies, nursing care, et cetera. And as I say, that is extremely close to the number that the folks at Emory have come up with. That does not include the cost of the preparation, which I just referred to, and it does not include the cost of what I would call the opportunity cost, which is this is a 10-bed unit that is otherwise used for medical, surgical admissions, that would otherwise be completely full with routine patients receiving their care.

Mr. GREEN. OK. Are the policies that were in place prior to the current Ebola outbreak still in use, or has the University of Nebraska Medical Center made changes to its protocol and guidelines based on literally real-life experiences?

Mr. GOLD. We do evolve our policies and procedures. We learned a lot from each of the patients, particularly the first patient that we housed. We, for instance, put a completely self-contained laboratory unit into the bio-containment unit so that laboratory specimens are not transported outside of the unit. We are also very privileged, and I note there has been a lot of discussion about waste management, is we decontaminate all of the waste as it leaves the unit so there is no transportation of any infectious waste material outside of the unit, which makes it much safer for the community, and it also makes it much less expensive for us to have that built into the unit. And this is only because the unit was planned as it was constructed prior to 2005, understanding that the disposal of infectious waste would, indeed, be a big problem from logistical as well as expense, and, therefore, it was self-contained.

Mr. GREEN. Mr. Chairman, I know I am out of time, and I appreciate—because where we were at 6 weeks ago, we have actually evolved and I am glad the experiences, we are actually learning from them. And I appreciate our panelists being here today.

Mr. MURPHY. Thank you. Gentleman yields back.

Now I recognize Dr. Burgess for 5 minutes.

Mr. BURGESS. Thank you, Mr. Chairman. I want to thank all of our witnesses for being here today, and bearing with us through what has been a very long but a very informative hearing.

Dr. Gold, there is a difference though between the type of patient you get at your center, because they are referred, because there is not a direct access where someone thinks, oh, I have Ebola, I am going to go to Dr. Gold's center in Omaha. Mr. Duncan came through the Presbyterian emergency room with all of the other patients that came in that Thursday night, and his case had to be winnowed out of all of the other load that was in the emergency room, but in your situation, a patient only comes after they have been identified, is that correct?

Mr. GOLD. Thus far, the patients that we have admitted to the bio-containment unit have all come with a diagnosis, a PCR diagnosis of Ebola. However, given our national reputation, the number of phone calls, emails, even emergency room visits has actually been quite interesting with people with febrile illnesses saying please tell me if I have Ebola.

Mr. BURGESS. Well, let me just ask you about that then. So then patients who arrive in your emergency room—I mean, you outlined how you have almost a dedicated laboratory handling of the specimens from an Ebola patient, but that is someone you know about. If somebody comes to the emergency room and they have fever, they have a headache, and they have all of these other complaints, I mean in addition, if someone thinks to do the PCR Ebola test, but in addition, they are going to get a CBC, they are going to get a urinalysis, they are going to get any number of other blood tests, and these tests would go through the normal auto-analyzers in the lab without knowing that that patient actually had an Ebola possibility, or is that, in fact, separated out of your emergency room?

Mr. GOLD. Yes, sir, we have put protocols in place, and we have also widely shared them for triage screening in the emergency department if there is any suspicion that a patient either has a travel history or a symptom complex, they are immediately sequestered, there is a specific nursing protocol with personal protective equipment, et cetera. There is a notification of the team, and the laboratory specimens are processed through the bio-containment unit facilities, and then decontaminated as if they were positive, even before we know the results of the PCR. And we are doing PCR testing on-site now, which makes it a lot faster and a lot easier, otherwise it would have taken days previously.

Mr. BURGESS. But again, I would just point out that that is in a perfect world. In the rough and tumble, Buford, Texas, ER, all of those protocols would not immediately be available.

And we will get back to that, but, Mr. Isaacs, I just have to ask you, I mean that Typhoid Mary analogy that you used, that is the first time I have heard of that. Now, we all remember Typhoid Mary of lore, and she actually had the ability to infect people. Do your Typhoid Marys carry the ability to infect people when they themselves are asymptomatic?

Mr. ISAACS. We don't know. That is the question. Now, Typhoid Mary, in the case of her, she was dealing with a bacterial infection——

Mr. BURGESS. Right.

Mr. ISAACS [continuing]. But what I do know for a fact is that there have been a number of asymptomatic, non-feeble people whose blood had been drawn and it tested positive. And I think that there is something about the PCR test that, you know, I heard Dr. Frieden say, in medicine, you never say 100 percent. But the thing with Ebola, if you don't bat 1,000 every day, somebody dies.

Mr. BURGESS. Right.

Mr. ISAACS. And——

Mr. BURGESS. And someone else is exposed.

Mr. ISAACS. Yes. My point in saying all of that is not to raise fear, but it is saying that we need to go to Africa and beat the disease over there.

Mr. BURGESS. Yes, sir.

Mr. ISAACS. We need to keep it contained.

Mr. BURGESS. You know, you raise a point of two of your doctors were infected, and you weren't sure why. We had two nurses in Dallas who were infected, and we are not sure why. And, again, that just underscores that there is probably more not known about this disease than what is known, and that is, again, why I began this with, we all ought to step back and have a little bit of humility. I would even extend that to Mr. Waxman. I mean, he is not known for his humility. We all have to have a little humility in dealing with this.

Dr. Lakey, I just have to ask you. What you did in Dallas to sort of restore good order and discipline at a point where it really almost veered toward being out of control, I mean, it took a lot of courage to exercise those control orders on the individuals when you did that, and I will admit to being somewhat surprised turning on the news and hearing that that had happened. What were some of the things that went through your mind as you developed that?

Mr. LAKEY. So we don't take control orders lightly, and in Texas, I can put a control order, it is not enforceable until I get a judge to enforce it. But we have to get the monitoring done in an event like this. We have to make sure that people do not have fever, and if I could not get that done the way that I needed to protect the public's health, I take protecting the public's health extremely seriously, and so we put a control order in place. Now, if you do that, you need to make sure that you provide the support services around that individual to make sure that there is food, other support there so you can make sure it is as humane as possible.

With the nurses following the nurse that became infected we, again, needed to make sure we had monitoring in place. We also, as we looked and stratified the risk, it looked to me like the biggest risk would be inside that room with Mr. Duncan, and so for those individuals, we said it is best during this time period that you don't go into large public congregate settings, movie theaters, churches, et cetera. It becomes a very large epidemiological evaluation when that occurs, if unfortunately, somebody becomes infected. And we were able to work with that staff, and they took this very seriously

to be able to limit their movement for the highest risk individuals.

Mr. BURGESS. Very good.

And, Dr. Gold, are your patients reimbursed by insurance or, are you reimbursed by insurance when patients are referred to you?

Mr. GOLD. We are in the process of having those discussions with the insurance carriers and with their employers, but to date, we have been unsuccessful in any reimbursement through a commercial carrier. And I can't really tell you whether anything has happened in the last 24 to 48 hours, of course, but they have not responded.

Mr. BURGESS. Thank you. I appreciate that.

Mr. MURPHY. Now, Mr. Waxman, you are recognized for 5 minutes.

Mr. WAXMAN. Thank you, Mr. Chairman. I will take five and maybe take an additional two, like we saw with the other question there.

Earlier this month, President Obama sent to Congress a $6.2 billion supplemental budget request to enhance the U.S. Government response to the Ebola outbreak. The President's request is intended to fund both immediate and long-term needs in the United States and West Africa.

Dr. Gold and Dr. Lakey, you can both speak to the readiness of our public health system here in the United States. The President's budget request designated $621 million to CDC for domestic response, including funding for State and local preparedness, enhanced laboratory capacity, and infection control efforts. It also designates $126 million for hospital preparedness.

Dr. Lakey, can you comment on the need for additional funding for State and local public health authorities, what are the top funding priorities?

Mr. LAKEY. Thank you, sir. As I outlined in my comments, the State public health, local public health, is having to do a lot of work right now. A laboratory response network, having a laboratory system out there so we can rapidly diagnose individuals is essential for us to make the diagnosis and isolate individuals.

The epidemiologists that contact individuals, talk to them, figure out the risk, is essential. The hospitals having pre-designated facilities so we can care for those individuals is very, very important. This isn't the only event. We have had multiple events; West Fertilizer explosion, Hurricane Ike, et cetera. That system, to be able to rapidly respond, is essential. Now, a lot of that is paid for by HPP funds. My HPP budget was reduced by 36 percent this last year. And that pays for the training, the education, the things that take place in order for the hospital systems to be ready.

Mr. WAXMAN. Um-hum. I wanted to ask Dr. Gold for his response. Would additional funding assist in hospital preparedness, and give us some examples of areas where additional funding would be helpful.

Mr. GOLD. I think the additional funding would be helpful to build the educational programs, to get the referral centers, as well as community hospitals completely up-to-speed. The additional fundings will allow to scale response in event we need to bring American soldiers or other volunteers back to the United States.

Additional funding will be used to create preparedness for future infectious crises of this nature, for which we currently do not have resources, and to build a sustainable infrastructure such as convalescent serum reserves, such as core laboratory testing, et cetera——

Mr. WAXMAN. Um-hum.

Mr. GOLD [continuing]. So that we have and sustain a national preparedness level.

Mr. WAXMAN. Thank you.

I want to pivot now to the funding for international efforts. Mr. Isaacs, Samaritan's Purse has been on the ground in Liberia since March, and understands the environment there. I want to talk to you about the NGO perspective on continuing needs and efficient use of resources. What are the main priorities on the ground in West Africa, and what resources are needed to accomplish those efforts?

Mr. ISAACS. So if I may just add something to what you said. We have actually been there for 11 years——

Mr. WAXMAN. Yes.

Mr. ISAACS [continuing]. And the disease broke out in March, so we have a large footprint, we have 350 staff, about 20 expatriates, we have aircraft there, we have a lot of capacity in the country. And when the disease broke out, we were 100 percent focused on fighting it.

What we are seeing today that we think that other resources are needed for, this is very practical but you know what, logistics are everything, and there is a lot of discoordination and confusion right now between the U.N. players, UNHAS, UNAMIR, and the DoD about gaining access to airlift. There are no protocols in place about moving blood samples, so if CDC goes out into an area and identifies a new village, and there are 10 or 12 people who test positive, they call us in because we have assembled rapid response teams. We are not able——

Mr. WAXMAN. Um-hum.

Mr. ISAACS. —to take the blood samples out to other aircraft, we have to move them out by land. A rapid diagnostic test is one of the greatest things that are needed there, and I think, frankly, that if the U.S. Military was running the coordination cell, things would——

Mr. WAXMAN. OK.

Mr. ISAACS [continuing]. Be done quicker.

Mr. WAXMAN. Well, the U.S. is committed to helping in Liberia, and has provided personnel, resources, and funding. As we continue our aid efforts, we must also keep in mind the need for a flexible response. Initial reports indicate that there are empty beds in Ebola treatment units in Liberia, so the aid efforts have adjusted accordingly to monitor occupancy and only build additional ETUs as needed.

Mr. Chairman, I hope that we can join together to quickly pass the President's budget request. We heard from this panel and we heard from our first panel about the urgency of the task at hand, and the public health catastrophe that will occur in West Africa if we fail to do so.

Thank you very much, and yield back the balance of my time.

Mr. MURPHY. I appreciate that. Certainly, I would like to see that happen, too, and I hope you also take a careful look what Mr. Isaacs' group is also looking at. They need a bridge to move people back and forth because that is a struggle right now.

Mr. WAXMAN. Um-hum.

Mr. MURPHY. Now I recognize Mr. Long for 5 minutes.

Mr. LONG. Thank you, Mr. Chairman. And I thank you all for being here, and not only that, but what you do on a day-to-day basis because I for one really appreciate it.

Dr. Gold, you said—well, let me ask you something before that. Dr. Martin Sali, is that how it is pronounced?

Mr. GOLD. Yes, Salia.

Mr. LONG. Salia. Dr. Salia was taken to your facility, correct?

Mr. GOLD. Yes.

Mr. LONG. And the reports that we got on the news, turned on the radio and they said that there was a doctor with Ebola that was very critical, was the first thing I thought, and I probably had the same thought as a lot of people that that is probably not a good thing when they say that he is very critical. He later deceased just a few days later. I apologize, I had to step out of the room for a few minutes, which I normally don't do, I am usually here for the whole duration of these hearings, but was there a reason that he was delayed coming to this country for assistance, for help? Do we know, because that seems strange that he would be that far gone, so to speak, before they would think about flying him out?

Mr. GOLD. It is unclear to us what the logistics were that might have delayed it. As we were told, that he had an initial blood test for Ebola that was negative, and only three days later did he test positive. And when he tested positive, there was a period of time before at least we were contacted, I don't know whether the transportation organizations or the State Department were contacted, but from the time we were contacted, the plans for transfer were put into place virtually immediately.

There was also a good deal of uncertainty how stable he was immediately prior to transfer, but once the decision was made to transfer him, rest assured that he got every conceivable treatment.

Mr. LONG. I am sure he did, and I wasn't implying that at all, but I was just curious as to why they waited as long to try and get him a—because when I heard that first radio report——

Mr. GOLD. I am told——

Mr. LONG [continuing]. And they said he was very critical——

Mr. GOLD [continuing]. That is not uncommon for people to test negative even when they are symptomatic. We have heard about other people who have tested positive who were asymptomatic. This is not 100 percent certainty disease, and we are learning an awful lot about the spectrum of how symptomatic people get, versus their viral levels, et cetera.

Mr. LONG. Let me stay with you, Dr. Gold, and switch up the topic just a little bit. You said in your written testimony that you have coordinated extensively with the CDC and HHS on readiness and treatment. Can you tell us more about that collaboration, on what specific issues have you advised the administration?

Mr. GOLD. We are working with Emory, with the CDC and with ASPR on standing up educational protocols, visiting other institu-

tions across the United States to help them enhance their readiness, hosting teams from other institutions across the United States. In Nebraska, we have recently had a team of 9 or 10 people from Johns Hopkins University, as well as putting together a series of protocols that would be used for, if you will, accreditation or certification of readiness, and maintenance of readiness.

Mr. LONG. And when you say you have advised the administration, have you spoken with Mr. Klain, the new czar—the Ebola czar?

Mr. GOLD. Yes, sir, several times.

Mr. LONG. OK, and did the administration, did they incorporate or accept your recommendations, and did they reject any of your recommendations?

Mr. GOLD. We are working specifically with Dr. Lurie, who was your guest here a little bit earlier, and we speak probably daily on the development of these protocols. There is a conference call that is scheduled for Friday——

Mr. LONG. So you feel they are accepting your recommendations?

Mr. GOLD. Thus far, yes, sir.

Mr. LONG. Good, OK. And, Mr. Isaacs, we were talking about earlier, or you were in your testimony, people traveling on planes and being checked temperature-wise every so often, three times a day, did you say, or what were——

Mr. ISAACS. Our staff are under protocol to take their temperature four times a day.

Mr. LONG. Their own personal temperature?

Mr. ISAACS. No. We actually have staff in our Ebola task force that call them every day, and we keep a log of it. I could call my office right now and tell you where every one of our people are——

Mr. LONG. But you are talking about your staff, not their patients?

Mr. ISAACS. Yes, our staff.

Mr. LONG. OK.

Mr. ISAACS. Not——

Mr. LONG. OK. I got you, OK.

Mr. ISAACS. We are just monitoring their health.

Mr. LONG. Right. OK, good. OK, I misunderstood earlier because you hear these reports about, well, we will check their temperature when they get off the plane. I think we need to do a travel ban, as I have mentioned before, but if they say, well, take their temperature, and then they say they cannot be symptomatic, not have a temperature and still have Ebola, so my question is probably invalid since you are talking about your staff.

But anyway, thank you all again for your service and what you do, and for being here today.

Mr. Chairman, I yield back.

Mr. MURPHY. Thank you.

Mr. Griffith, you are recognized for 5 minutes.

Mr. GRIFFITH. Thank you, Mr. Chairman, I appreciate that. Thank you all for being here, and thank you, Mr. Isaacs, for the work that you all have been doing there for 11 years. Samaritan's Purse——

Mr. ISAACS. Thank you.

Mr. GRIFFITH [continuing]. Is a good organization, and appreciate what you all have done——

Mr. ISAACS. Thank you.

Mr. GRIFFITH [continuing]. Not just there, but around the world. Speaking of that, in your written comments, you said many public health experts are telling us that we know the disease, how to fight it, and how to stop it. Everything we had seen in this current outbreak, however, suggests we do not know the science of Ebola as well as we think we do. I touched on this earlier in the previous testimony related to, I believe, the reservoir species is what Dr. Frieden was talking about, and that we don't know the full extent of the reservoir species. And you touched on that in your written testimony as well, and you asked questions can the virus live in other mammals besides primates, bats, rodents, and humans, and you attached a study that related to pigs. Do you ask this question because your people on the ground have some questions, or just because it is a blank slate and we really don't have much research on it?

Mr. ISAACS. I think that Ebola is potentially a much more serious disease than it is given respect for. What we are seeing is that it is flexible, it is deceptive, it is sneaky, it is agile, and every time somebody thinks they have it figured out, it shows us something new. And I think that we as a society cannot make assumptions that we know what it is and what it will do. I think that we need to be extraordinarily careful about letting it come onto this shore. And while it is true that when it has come here, we quickly identified it and isolated it, the truth is, as these doctors could tell you, particularly the gentleman from Texas, that if he had 10 or 20 or 50 cases down there, it would consume his capacity to isolate it. And so while we can isolate it, if it were to get out from under us, it would quickly exceed our capabilities, and that is why I think it is so extremely important to invest resources to fight and stop this disease in Africa before it gets off that continent in a major way.

Mr. GRIFFITH. And I appreciate that. Have any of your people there in Africa indicated to you that they are concerned about animals that might be carrying the disease, or is that just a question——

Mr. ISAACS. We live Ebola 24 hours a day. It is all we talk about. We talk about it all.

Mr. GRIFFITH. Right.

Mr. ISAACS. And, yes, we are worried about it. We don't know. Evidently, in Spain, they thought the little dog—they killed it. In Texas, you put it in isolation, and I am glad the lady got her dog back, I am a big dog guy, but who knows if it—maybe there is some science on this, but I think that we don't know.

Mr. GRIFFITH. Well, I would refer you to a study that came out in March of 2005 in the Emerging Infectious Disease—I guess that is the name of the publication, but it is a CDC publication. I would be happy to get you a copy of it, and it is available, where they talk about the potential of dogs, and it says that although dogs can be asymptomatically infected—in other words, they don't get the disease, and sometimes the science gets confused on television, they don't get the disease—but they are carrying the antibodies for the disease, and this study says asymptomatically infected dogs

could—doesn't say they are, could—be a potential source of human Ebola outbreaks and a virus spread during human outbreaks, which would explain some epidemiologically unrelated human cases. And it goes on, and it talks about there are cases in the past in Africa where they don't have any idea where the disease came from. And I asked Dr. Frieden about that, and he said that maybe bats, but they still don't know what all the reservoir species are.

In a prior hearing before today, when we were here in October, I said, what are we doing about animals coming into this country, and it was more or less laughed off, but it is a concern, wouldn't you agree, Mr. Isaacs?

Mr. ISAACS. I do agree, and I will tell you why it is so important. This is not the flu, this isn't influenza, this is a disease that kills 70 percent of the people that get it. And, if you look at what the disease has done this year—5,550 people dead, 13,000 cases—that is extraordinary. And none of us have swum in these waters before, and I don't think that we can use case studies that come from 1976 today to make assumptions about an unprecedented event that crosses national boundaries. It is now in Mali. When you look at the disease, the caseload may be going down in Liberia, but the disease is, in fact, spreading geographically. We fear that very soon we will see it in Sierra Leone, and it has already been identified in Mali.

Mr. GRIFFITH. Well, and I appreciate your comments on that, and I liked your term "travel management" because I do believe we want people to be able to get there to provide humanitarian relief, like your organization does. At the same time, I think we have to be very, very careful.

And with that, Mr. Chairman, I yield back.

Mr. MURPHY. Gentleman yields back.

Now I recognize Mr. Tonko for 5 minutes.

Mr. TONKO. Thank you, Mr. Chair.

State and local health departments and local hospitals serve at the frontlines for treatment and containment of infectious diseases in the United States. In the case of Thomas Duncan in Dallas, the country saw the challenges faced by local health departments and local hospitals dealing with an unexpected infectious disease.

So, Dr. Lakey, now that you have had some time to reflect on Mr. Duncan's case and how it was handled, can you talk about some of the challenges Texas Health Presbyterian Hospital faced in terms of preparedness?

Mr. LAKEY. Yes, sir. I think the first challenge was to recognize the first case ever in the United States. A rare disease in the United States. Everyone was watching what was occurring in Africa, but to think that that was going to occur in your emergency room on a busy night was a challenge. I think there was a challenge related to the national strategy, and I say national because there are experts outside of Government that review those strategies on infection control. But the assumption that any community hospital can care for an individual that has that much diarrhea, that much vomiting, with that much virus in those fluids I think was a faulty assumption, that it took a really dedicated team to be able to care for that individual.

I think one of the lessons learned was healthcare nurses, physicians, they take their responsibility extremely seriously, and they showed up to take care of Mr. Duncan and their colleagues. I think a lot of people were worried that healthcare wouldn't show up, that healthcare providers would not show up, but they showed up.

Mr. TONKO. Um-hum.

Mr. LAKEY. I think there was a lesson related to the level of personal protective equip. And that was changed, and so the higher-level personal protective equip, and I think we learned that you don't have to wait for a temperature of 101.5 to diagnose the individuals. We lowered that temperature threshold just because we wanted to make sure we identified individuals early, and we identified them with temperatures of about 100.6, 100.8, which, by the previous guidelines, wouldn't have met the criteria for testing. So those are just some of the lessons, sir.

Mr. TONKO. And in what ways could the Dallas and the Texas State Public Health Departments have been better prepared to handle an unexpected case of Ebola or any infectious disease?

Mr. LAKEY. Yes. So I think there are several components to that. I think the, you know, necessity to train, you know, I think health departments across Texas and across the Nation had been preparing. There was a lot of information that we had been sending out, but that is different than saying this is a real event and I have to be ready right now. I think one of the things that we are doing right now to make sure we improve our preparedness is not only making sure that all hospitals are ready to think that Ebola is possible, and in the differential diagnosis, isolating those individuals and informing individuals, but make sure that there is a system across the State where those individuals then can be seen and be tested before you get to a level of a hospital that can care for those individuals. No hospital wants to be an Ebola hospital. You know, it is just hard on getting other individuals into your emergency room if you are labeled the Ebola hospital. And so there is some reluctance across the United States to step up and be that facility, but that is one of the things that we are working on right now.

Mr. TONKO. Thank you.

Dr. Gold, as you said in your testimony, University of Nebraska Medical Center is recognized as a national resource for your readiness to provide care for Ebola patients. You have successfully treated Ebola patients, and just last week another patient who sadly passed away was brought to your facility for treatment. Can you briefly describe the protocols and procedures UNMC had in place that ensured staff was appropriately prepared to care for Ebola patients?

Mr. GOLD. Yes, sir. Since the unit was stood up in 2005, the staff of between 40 and 50 people has been sustained. And that staff meets on a monthly basis to go over policies and procedures, emerging trends in Africa and South America, et cetera, and as well as works closely with the military through STRATCOM and the Offutt Base. But that team also drills 4 times a year, and they do real exercises in the community with waste disposal, with paramedic transport, et cetera.

We also practice donning and doffing, use of various types of personal protective equipment, dialysis, respiratory management, et

cetera. So all of the typical procedures and protocols are not only learned but actually practiced hands-on, real-time—at a minimum four times a year for every staff member.

Mr. TONKO. Thank you very much. Mr. Chair, I yield back.

Mr. MURPHY. Thank you.

Mr. Terry, 5 minutes.

Mr. TERRY. Thank you.

Dr. Gold, what are the costs and impacts of being prepared when you are preparing and practicing four times a year, when all of those pieces within the community are also participating?

Mr. GOLD. The actual out-of-pocket costs have been calculated to be between $250,000 and $350,000 a year to maintain the core team of nursing support, techs, respiratory therapists, et cetera. That does not count the in-kind time that our physicians and other leaders put into it, as well as does not count the time of the maintenance of the unit, the air handlers, water supply, autoclaves, maintenance of stock of equipment, et cetera. That is just the personnel time that goes into maintaining the readiness.

Mr. TERRY. In your opening statement, and I hinted this in one of my questions to the CDC, is that for the level of facilities that UNMC and Emory are, and when you train and practice like this, there should be some maintenance funds to offset those costs.

Mr. GOLD. Well, we certainly agree with that. I believe that the CDC over time has had a relationship with the Emory organization, predominantly to protect the employees of the CDC that work with highly infectious agents in their testing laboratories and around the world.

We have not had that type of relationship, and would think it would be appropriate perhaps through the UR instructor or through some other vehicle that exists.

Mr. TERRY. Are you being homered?

Mr. GOLD. Sorry?

Mr. TERRY. Emory being in Atlanta and CDC being there, are they just giving money to the hometown hospital——

Mr. GOLD. I think they needed a——

Mr. TERRY [continuing]. Or is there some contractual——

Mr. GOLD [continuing]. Just like we need a way to take care of our employees if something tragic were to happen and they were to become ill, they need a way to manage their employees as well, and I think that was the original basis of the relationship. We would——

Mr. TERRY. OK.

Mr. GOLD [continuing]. Very much enjoy a similar relationship.

Mr. TERRY. And I think you are on equal, if not better, footing, medically speaking, at least.

Speaking of that, just to pick your brain a little bit here, and maybe someone has already done this, but you have had two successful patients that got to hug all the doctors and nurses that helped them, and then we had the last patient that came in that appeared from the TV video to be in supercritical condition. What, in your opinion, is the reason that perhaps this physician, the latest patient, passed away? Any takeaways from being how you were able to treat the first patients versus this one that came in a more critical condition? Any lessons learned?

Mr. GOLD. I think the most important lesson learned is that the early we have access to treat any patient here or in Africa, the better the yield is going to be.

This particular patient had renal failure, liver failure, was unconscious when he arrived in the United States, and what we have learned is that those are all very bad predictors of outcome. The earlier patients that we cared for did have early organ failure, but were reversible through good supportive care, and they all received experimental medication, as did this patient, but I believe that the organ system failure we dealt with over the weekend was just far too extreme.

Mr. TERRY. So I mean with just this one example, it is probably not certain, but is there just a point of no return with an Ebola patient, their organs have already shut down, is there a way of treating them so they can survive, or is it just at that point not survivable?

Mr. GOLD. I don't think it is possible to predict. Young people, this gentleman was in his early 40s, and the thinking was that it was worth an all-out effort to attempt to save him. And I don't think, if you could take the exact same patient twice, that you could predict the outcome.

Mr. TERRY. Yes. Very good. Appreciate it. And, Dr. Gold, you and Nebraska Medicine and UNMC make us proud. I appreciate all of your efforts.

Mr. GOLD. We have a great team. Thank you, sir.

Mr. TERRY. You do. With Mr. Green's daughter.

Mr. MURPHY. Gentleman yielding back?

Mr. TERRY. I yield back.

Mr. MURPHY. All right, I will recognize Mr. Green for 1 minute of wrap-up.

Mr. GREEN. Thank you, Mr. Chairman. I ask unanimous consent to place in the record a statement by the AFSCME, the American Federation of State, County and Municipal Employees, urging Congress to support the President's emergency funding of $6.18 billion.

Mr. MURPHY. Without objection.

[The information follows:]

AFSCME
We Make America Happen

Statement for the Record
by the
American Federation of State, County and Municipal Employees (AFSCME)
for the Hearing
on the
Update on the U.S. Public Health Response to the Ebola Outbreak
Before the
Subcommittee on Oversight and Investigations
Energy and Commerce Committee
U.S. House of Representatives
November 18, 2014

American Federation of State, County and Municipal Employees, AFL-CIO
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This statement is submitted on behalf of the 1.6 million members of the American Federation of State, County and Municipal Employees (AFSCME). AFSCME represents workers who are on the front lines of America's domestic response to Ebola, from the New York City Emergency Medical Services (EMS) crew that transported Dr. Craig Spencer to Bellevue Hospital, to registered nurses at Children's Hospital of Philadelphia (one of a few pediatric facilities designated for Ebola care) to state and local government public health staff monitoring travelers from West Africa to hospital staff across the nation.

While this hearing is focused on the domestic front, AFSCME agrees with public health experts that we will improve overall global health security by building immediate and long-term capacity in Africa to contain and diminish the epidemic through medical and public health infrastructures. Germs have no national boundaries.

Strong, Stable Public Health Systems are a Critical First Line of Defense

It is a core and inherent government role to protect our nation from the threats of infectious diseases. No matter where they live in our country, all Americans have the right to basic protections. A strong, stable public health system at the national, state and local level is fundamental to the ability of our nation to detect, control and respond rapidly to infectious diseases and prevent epidemics. Public health departments around the country have this unique role and responsibility. Together with our health care system, these workforces are the first line of defense against emerging infectious threats.

The single most important resource for public health departments are people – trained and experienced workers. But efforts to prevent and control infectious diseases are vulnerable because we have let our guard down by cutting staff and reducing capacity. Since 2008, cuts to funding for public health preparedness have meant the loss of 1 in 5 state and local public health jobs. That loss of 51,000 workers has left states, counties and cities less ready and able to respond to the predictable, annual outbreak of influenza, much less emerging infectious disease threats. We call on Congress to provide funds to improve state and local public health departments and laboratories and to increase monitoring of travelers, as well as the purchase of needed equipment to protect workers. Without adequate funding, state and local governments will be unable to fulfill their unique role in protecting the health of our nation.

Protecting Workers on the Front Lines Keeps our Health System Functioning and Protects the Public

To protect the American public we must protect those on the front lines – health care workers, EMS and other workers who are at higher risk of being exposed to the Ebola virus (and other infectious diseases) when they do their job. Protecting workers is the best way to protect the public from exposure. The transmission of the Ebola virus to nurses at Dallas Presbyterian Hospital exposes the cracks in our system of protecting workers. Workers across the nation who are at high risk deserve better. Moreover, Americans will be less alarmed when they know workers are being protected from exposure and less likely to become transmitters of disease.

The experience with Dr. Spencer in New York City shows it is possible to have a well-honed system of worker protections. New York City's Fire Department's Bureau of Emergency Medical Service, in partnership with AFSCME Local 2507, developed protocols for transporting potential Ebola patients to the hospital. Only specially protected and trained EMS workers will treat and transport suspected Ebola virus patients. These procedures reflect a strong commitment to public safety, worker protections and ongoing training. For the protocols to be effective, communication and administrative coordination with 911 operators, the local health department and hospital system is required.

In New York City, a specially trained HAZ TAC team does the transport using a fully encapsulated and fluid resistant suit with a hood and gloves, an additional pair of nitrile gloves, and a powered air purifying respirator (PAPR). Once the transport is completed the workers go through a special procedure to remove their personal protective equipment and then a special separate team conducts the decontamination process. This protocol also includes monitoring EMS workers for an increase in temperature. Because of extensive training and compliance with the protocols, the EMS workers who transported Dr. Spencer did not have a breach in their protective equipment and had no exposure to Ebola. Though a model to be emulated, these protocols are a strain on the City's emergency preparedness resources.

AFSCME supports the Obama administration's emergency funding request to help state and local government agencies and hospitals purchase the needed level of personal protective equipment. As we have seen from the photos of health care workers and the experience in New York City, the protective equipment is elaborate, expensive and necessary.

Along with Federal Emergency Funds We Urge Increased Accountability to Prevent the Risk of Ebola Exposure

The Centers for Disease Control's (CDC) Ebola specific guidelines are important and vital. However, the Occupational Safety and Health Administration (OSHA) is the lead federal agency responsible for protecting workers at high risk of exposure to Ebola through their work. Ensuring that all employers whose workers are at high risk of exposure to Ebola comply with applicable CDC guidelines and OSHA standards will ensure the safety and health security of workers on the front lines and the public.

OSHA has identified the following types of workers at risk of Ebola exposure: health care workers caring for a sick individual, airline flight crews, service and cargo employees, laboratory workers, mortuary and forensic workers, emergency responders, individuals involved in border protection, customs, and quarantine operations, and workers in other critical sectors who may come into contact with infectious blood and body fluids.

Employers who have workers that may be exposed to the Ebola virus need to comply with a combination of OSHA standards in order to implement a comprehensive worker protection program. Workers must not be discriminated against for raising legitimate safety concerns.

OSHA's Bloodborne Pathogens standard (29 CFR 1910.1030) covers exposure to Ebola virus. Ebola is among the subset of contact-transmissible diseases to which the Bloodborne Pathogens standard applies, as it is transmitted by blood or other potentially infectious materials as defined in the standard.

The Centers for Medicare and Medicaid Services (CMS) has an accountability role too. Hospitals not otherwise covered by OSHA rules must comply with OSHA's Bloodborne Pathogen standard as a condition of Medicare reimbursement (42 U.S.C. 1395cc (a) (1) (V)).

In situations where workers may be exposed to bioaerosols containing Ebola virus, such as is possible when an infectious patient or individual is vomiting or experiencing diarrhea, employers must also follow OSHA's Respiratory Protection standard (29 CFR 1910.134).

Other elements of infection control for Ebola, including a number of precautions for contact-transmissible diseases, are covered under OSHA's Personal Protective Equipment (PPE) standard (29 CFR 1910.132) and the General Duty Clause of the Occupational Safety and Health (OSH) Act of 1970, which requires employers to keep the workplace free of recognized hazards that can cause death or serious harm to workers.

Under the PPE standard, an employer must conduct a job hazard assessment to determine whether hazards are present that require the use of PPE. If PPE is required, the employer must provide it at no cost. The employer must train employees who are required to use PPE. Training must cover when and where to use PPE, how to use PPE, the limitations of relying on PPE and how to maintain and dispose of PPE.

Employers may also be required to follow these and other standards to protect their workers from exposure to chemicals used for cleaning and disinfection.

The safety and health of flight crews are under the jurisdiction of the Federal Aviation Administration (FAA) and generally not subject to OSHA requirements. However, under a memorandum of understanding between the FAA and OSHA, they are subject to the following OSHA standards: Bloodborne Pathogens (29 CFR 1910.1030), Occupational Noise Exposure (29 CFR 1910.95), Hazard Communication (29 CFR 1910.1200).

Twenty-five states, Puerto Rico and the Virgin Islands have OSHA-approved state plans and have adopted their own standards and enforcement policies. For the most part, these states

adopt standards that are identical to Federal OSHA. However, some states have adopted different standards applicable to this topic or may have different enforcement policies.

The California Division of Occupational Safety and Health (Cal/OSHA) Aerosol Transmissible Diseases (ATD) standard is aimed at preventing worker illness from infectious diseases that can be transmitted by inhaling air that contains viruses (including Ebola), bacteria or other disease-causing organisms. While the Cal/OSHA ATD standard is only mandatory for certain health care employers in California, it may provide useful guidance for protecting other workers exposed to Ebola virus.

Conclusion

Despite the tragic wake-up call of 9/11, the outbreak of H1N1 and avian flu, our public health system is not ready for the challenge of Ebola or any public health crisis. Insufficient investment, including the sequester and other recent federal funding cuts have harmed our public health infrastructure. Years of cuts have meant losses in experienced and trained public health staff.

AFSCME urges the Congress to support the President's emergency funding request of $6.18 billion to fight Ebola abroad and respond to it here at home. Protecting the workers who will be on the front line of this fight must be a top priority. Health and safety standards and CDC guidelines must be followed and enforced. Protective equipment must be available and all workers who may be exposed, including doctors and nurses, paramedics, lab technicians and custodians, must be trained to reduce their risk of infection. There remains a need for additional targeted training funds to ensure that hospital workers, first responders and others who are at risk of occupational exposure are trained. We also urge Congress and the Obama administration to support resources for agencies focused on worker health and safety protection to evaluate compliance with these guidelines and required procedures.

With respect to federal Ebola funds that may be granted to hospitals and other entities, we urge that the Congress make receipt of these funds contingent upon compliance with CDC guidelines as well as all appropriate OSHA standards.

Mr. GREEN. And, Mr. Chairman, I want to thank both panels today. I know the first one is gone—

Mr. MURPHY. Can't hear you.

Mr. GREEN. I just appreciate our witnesses being here, but also for the panel that was put together, and that is what our Oversight and Investigations Subcommittee is supposed to be doing, and I appreciate it. But to follow up on my colleague, I am the first time in history that the intelligence from your children went back down the tree, and so I just appreciate that the first time in many times. Thank you.

Mr. MURPHY. So noted for the record.

I want to thank this panel—you can have 30 seconds here. Go ahead. Dr. Burgess.

Mr. BURGESS. Well, I was going to thank the panel, too. I mean I have been through a number of these hearings. Our committee, of course, has done hearings. I was allowed to sit in Homeland Security when they did a field hearing in Dallas. I sat through the hearing on foreign affairs last September. This has been the most informative panel that I have had the pleasure to hear from, and I really appreciate—I know it was a long day and I know we made you wait a long time, but I really appreciate you guys sticking with us and sharing with us the information that you shared because it has been absolutely critical.

And I will yield back.

Mr. MURPHY. Thank you, Doctor.

I want to add to that. I almost had the feeling that the first panel we had today was spiking the ball. "We got this, and we can be confident." And I don't agree. After we had our hearing several weeks ago, we put forth several recommendations, among them we needed some level of travel restrictions. People ought to be isolated for 21 days, and what I hear, Mr. Isaacs, Dr. Lakey, I don't know if it is the same for Dr. Gold, not only did you do that along with the hospitals of so many colleagues, but your employees didn't complain. They recognized they don't leave their compassion at the borders of Africa.

I thank them for that selflessness of all, not only while they are there, but in returning home. From this, several takeaways. That people with level 4 gear can still get Ebola. We don't know all the routes. And what we don't want to have is a false sense of security that everything is fine. I worry that the first hearing, this room was packed with cameras and people in the Press. At this point in the hearing, what you have told us should still tell us we have to keep our radar up full alert here. We have a major battle for this taking place in Africa. We have a very difficult time for getting people in and out of there, and if any of those airlines stopped their flights, could happen at any moment, we are at a loss for moving people and supplies in and out of there.

So along those lines, I hold to it that we should still have people do 21-day restrictions from touching patients when they come back. I am glad that hospitals are doing that anyways. I hate to think what would happen if that did not occur. And, quite frankly, I think the hospital would have to tell other patients if they did have some employees who were recently with Ebola patients. But I also want to echo what Mr. Isaacs said, I am going to try and work this

out, that we ought to have a bridge for people going to and from Africa, for all your selfless workers, from so many charities, Catholic Relief and Methodist and so many other groups I have heard from—Doctors Without Borders—we need a way for them easily to go and easily come back, and we can help monitor them, so this is one less thing to worry about. With the amount of money we are talking about going through this, I, quite frankly, especially when you look at $20 million going to New York City just to monitor the people exposed to that doctor, that would pay for a heck of lot of flights, and we could have a charter system to do that.

Please stay in touch with us. Committee members will have 10 days to get other comments of the committee, and they will also have questions for you, and we ask that you respond in a timely manner with any questions for the committee.

And with that, again, thank you to the panel, and this committee hearing is adjourned.

[Whereupon, at 5:08 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

Opening Statement of the Honorable Fred Upton
Subcommittee on Oversight and Investigations
Hearing on "Update on the U.S. Public Health Response to the Ebola Outbreak"
November 18, 2014

(As Prepared for Delivery)

We are all grateful for the courageous men and women who are currently serving at the front lines of the Ebola crisis, both here in the United States and in West Africa - the nurses, the doctors, the disease experts, and the logistics specialists. We could not be more appreciative for their hard work and sacrifice.

This committee remains focused on the Ebola epidemic because it continues to rage on in Africa. And as it does, it continues to present a risk to the health and safety of those living in the United States. Although Ebola may no longer be on the front pages, the situation remains grave.

Our focus today is on the federal government's continuing response to the crisis. In the beginning, the government's response was slow and uncoordinated - guidelines for health care workers were continually revised, and there was a lot of confusion over how to handle travelers coming from affected parts of West Africa into the United States. We can and must do better, and that's what this oversight hearing is about - collecting the facts, identifying lessons learned, and working together to ensure that these lessons are incorporated into current and future planning.

As I made clear at our last Ebola hearing and in several letters to the administration before that, the time for a real strategy that works is well overdue. Lives are on the line and results matter. The doctors and nurses and service members on the front lines – including some who I know personally – know this is not a drill. And they know from experience that the U.S. and world response has not been good enough. We owe it to them, to the rest of the American public, to the people of Africa, and to the rest of the world to get this right.

I want to reiterate that Congress is a willing partner in the fight against Ebola, and our first priority is to protect the American people. It is unrealistic to think we can fight Ebola or any other public health threat on-the-fly, but that seems to be what's happening – both at the U.S. and international level – and it's unacceptable. So while the global health community bears responsibility to finally get ahead of this epidemic, we cannot afford to wait and hope for the international response to improve. We also cannot simply take the administration at its word – Congress must ensure there is a viable plan to keep Americans safe, and that the administration is executing that plan appropriately.

This means taking an honest look at where we are now and how we got here. It means assessing the facts on the ground to figure out what's working, what's not working, and why. And it means providing the government with the funds necessary to develop and implement an effective strategy, but in a way that's effective and accountable to the taxpayers.

There's no time to waste. Let's get on the right track and lead, so that we can all win this global fight against Ebola.

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THE COMMITTEE ON ENERGY AND COMMERCE

MEMORANDUM

November 14, 2014

TO: Members, Subcommittee on Oversight and Investigations

FROM: Committee Majority Staff

RE: Hearing on "Update on the U.S. Public Health Response to the Ebola Outbreak"

The Subcommittee on Oversight and Investigations will hold a hearing on Tuesday, November 18, 2014, at 1:00 p.m. in 2123 Rayburn House Office Building, entitled "Update on the U.S. Public Health Response to the Ebola Outbreak." This hearing will focus on the U.S. domestic and international response to the Ebola outbreak. Members will hear testimony from Federal witnesses and others involved in coordinating the U.S. response and operating at the front lines of the epidemic, both at home and abroad.

I. WITNESSES

Panel I

- Dr. Thomas R. Frieden, Director, Centers for Disease Control and Prevention;
- Dr. Nicole Lurie, Assistant Secretary, Preparedness and Response, U.S. Department of Health and Human Services; and,
- Rear Admiral Boris Lushniak, M.D., Acting Surgeon General, U.S. Department of Health and Human Services.

Panel II

- Mr. Ken Isaacs, Vice President, Programs and Government Relations, Samaritan's Purse; and,
- Dr. Jeffrey Gold, Chancellor, University of Nebraska Medical Center; and,
- Dr. David Lakey, Commissioner, Texas Department of State Health Services on behalf of the Association for State and Territorial Health Officials.

II. BACKGROUND[1]

According to the Centers for Disease Control and Prevention (CDC), the 2014 Ebola epidemic is the largest outbreak of the virus in history. As of November 14, 2014, the CDC, in conjunction with the World Health Organization (WHO), has identified 14,194 cases of Ebola in West Africa since the outbreak began in March. This has resulted in 5,492 recorded deaths so far. The CDC provides routine updates on the situation in West Africa here.

The first travel-associated case of Ebola in the U.S., which involved a man who contracted Ebola in Africa and then traveled to the U.S., was confirmed by the CDC on September 30, 2014. Two of the nurses who treated this patient at Texas Presbyterian Hospital in Dallas subsequently contracted the virus. A New York City doctor who had treated patients in West Africa also contracted Ebola in Africa and traveled into the U.S. before presenting with Ebola symptoms. Other health care providers and a U.S. journalist working in West Africa have been repatriated to the U.S. for treatment.

The U.S. public health systems' first encounter with Ebola cases highlights the need to improve domestic readiness and capacity to combat this and other infectious disease threats. The CDC has issued new related guidance including, but not limited to:

- Types of personal protective equipment to be used by healthcare workers while dealing with Ebola patients in U.S. hospitals;
- Procedures for cleaning and decontaminating for the Ebola virus; and,
- Ebola associated waste management.

Furthermore, as a result of our nation's first domestic experience with Ebola, the U.S. has implemented enhanced screening at five U.S. airports to prevent the spread of the disease. In light of recent outbreaks in Mali, the administration is reevaluating relevant protocols, including travel restrictions and screenings.

In addition, shortly after the Committee's first hearing on the Ebola crisis, the administration appointed Ron Klain to serve as the Ebola Response Coordinator to improve management of the U.S.' domestic and international response.

On November 5, 2014, the administration requested an additional $6.18 billion to address the outbreak in West Africa and fortify U.S. systems. A White House fact sheet describing the funding request is available here.

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[1] A detailed description of the Ebola virus and methods to treat infection is contained in the Oct. 16, 2014 staff memorandum available here: http://docs.house.gov/meetings/IF/IF02/20141016/102718/HHRG-113-IF02-20141016-SD002.pdf

III. ISSUES

The following issues will be examined at the hearing:

- Is the administration operating under a Federal emergency response plan? If so, what is it, to what extent has it been implemented, and is it adequate and appropriate? How do key administration officials fit into this structure?

- What should be done to better prepare the U.S. public health system for any future Ebola cases?

- Are new U.S. guidelines and protocols both sufficient and appropriate? How, if at all, will they be modified to account for new information (e.g., from hospitals and front-line health care workers) and developments on the ground?

- Are current screening, flight restriction, and quarantine policies appropriate? How, if at all, will these policies be modified to account for lessons learned, new information, and developments on the ground at home and abroad?

- Is the administration's most recent supplemental spending request appropriate? How will dissemination of any appropriated funds be administered, and what role, if any, will Ron Klain play in related decision-making? To what extent does the supplemental request account for recent developments on the ground, both in the U.S. and Africa?

- What are the current conditions on the ground in West Africa, and what measurable impact, if any, have U.S. efforts had in affected countries to date?

IV. STAFF CONTACTS

If you have any questions regarding the hearing, please contact Emily Newman, Alan Slobodin, Sean Hayes, or Charles Ingebretson at (202) 225-2927.

FRED UPTON, MICHIGAN
CHAIRMAN

HENRY A. WAXMAN, CALIFORNIA
RANKING MEMBER

ONE HUNDRED THIRTEENTH CONGRESS

Congress of the United States
House of Representatives
COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6115
Majority (202) 225-2927
Minority (202) 225-3641

December 9, 2014

Dr. Thomas R. Frieden
Director
Centers for Disease Control and Prevention
1600 Clifton Road
Atlanta, GA 30333

Dear Dr. Frieden:

Thank you for appearing before the Subcommittee on Oversight and Investigations on Tuesday, November 18, 2014, to testify at the hearing entitled "Update on the U.S. Public Health Response to the Ebola Outbreak."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

Also attached are Member requests made during the hearing. The format of your responses to these requests should follow the same format as your responses to the additional questions for the record.

To facilitate the printing of the hearing record, please respond to these questions and requests with a transmittal letter by the close of business on Tuesday, December 23, 2014. Your responses should be mailed to Brittany Havens, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, D.C. 20515 and e-mailed in Word format to brittany.havens@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Tim Murphy

Tim Murphy
Chairman
Subcommittee on Oversight and Investigations

cc: Diana DeGette, Ranking Member, Subcommittee on Oversight and Investigations

Attachments

CONTENT ACCURATE AS OF DECEMBER 15, 2014

Additional Questions for the Record
Dr. Thomas R. Frieden, M.D., M.P.H.
Director, Centers for Disease Control and Prevention
"Update on the U.S. Public Health Response to the Ebola Outbreak"
House Energy and Commerce Committee
Subcommittee on Oversight and Investigations
November 18, 2014

The Honorable Michael C. Burgess

1. **USAID is reporting a reduction in cases and a slowing in transmission. Simultaneously, the WHO has come out and explained that recent declines in cases from certain areas are a result of limited reporting activity and do not reflect a reduction in cases. Which is the accurate statement?**

   Response: The situation is different by country. In Liberia, during November and December, we have seen a decrease in new cases. In Guinea and Sierra Leone, unfortunately, this has not been the case. Reporting is imperfect, and while the capacity to report accurately is improving, it requires complex systems to link laboratory results to clinical reporting, and to update initial case reports with information about lab results and outcomes. An increasing number of suspect cases have had diagnostic testing done, allowing an improved focus on "confirmed cases" enabling verification in reporting, particularly important when many other diseases that can cause illness and death would raise suspicion of Ebola.

2. **Can you speak to the flexibility of the American response in West Africa? It has been reported that Ebola Treatment Units are opening with much smaller capacities than originally planned. Who has decided these smaller numbers are appropriate?**

   Response: The choice to reduce the numbers of beds in Ebola Treatment Units (ETU) was made jointly by Government of Liberia leadership and partners (United Nations, United States Government, others) through the Incident Management System. The lead U.S. Agency that participates in the system is USAID, through the U.S. Office of Foreign Disaster Assistance's Disaster Assistance Response Team (DART). CDC provided technical advice to DART as the lead for public health and medical response within the USG regarding the details of such decisions.

The Honorable Ben Ray Lujan

1. **What's happening in West Africa is a tragedy. Recently, the World Health Organization announced that this unprecedented Ebola outbreak had claimed the lives of over 5,000 people and that more than 14,000 have been infected. Meanwhile, the public health infrastructure in these countries, which was already poor, is increasingly strained. The World Bank reports this outbreak could cost West Africa $33 billion over the next two years.**

   Clearly, we have a moral responsibility to address this crisis. But defeating Ebola at its source is also vital to ensuring the safety of the American people. The Administration has correctly asked for a robust funding package to address this crisis. It is my hope and expectation that Congress will act on this request quickly.

However, the current Ebola crisis also demonstrates the importance of robust investments in our nation's public health infrastructure and in our research and development institutions. In my home state of New Mexico, our National Laboratories have developed genetic sequencing, low cost rapid pathogen assays, and computer models for how diseases spread.

Can you speak to the present and future role the National Labs play in our response to the Ebola crisis and similar outbreaks? Do you expect any of the funding in this request to go to National Laboratories – either directly or through partnerships?

Response: In addition to the work of the Biomedical Advanced Research and Development Authority (BARDA) work with the Department of Energy (DOE) (see ASPR/HHS response to QFRs), the Centers for Disease Control and Prevention (CDC) is working closely with partners at the National Institutes of Health, the Department of Defense, and the US Agency for International Development (USAID) to create a cohesive strategy for building sustainable laboratory capacities in West Africa, particularly the hardest hit countries of Guinea, Sierra Leone, and Liberia. As part of this collaboration, CDC and the DOE's Sandia National Laboratory (SNL) coordinate and leverage expertise and resources to respond to laboratory needs in the affected countries. A senior CDC medical officer is assigned as a Liaison Officer (LNO) to SNL and supports coordination of activities and projects between the institutions. SNL, within the framework of a DoD-CDC-NIH laboratory synchronization collaboration for West Africa, is a partner on improving laboratory services through:

- Deploying DTRA-funded field laboratories to Sierra Leone and Guinea to enhance diagnostic capacity.
- Attempting to minimize the time required for diagnostic testing by modeling sample collection and transportation strategies to improve testing turn-around time.
- Geospatially analyzing Ebola transmission in a quarantined village, Sierra Leone.

Finally, in all three countries, the national laboratory system has to be essentially rebuilt with the assistance of partners, including select National laboratories. There are funds requested in the CDC's portion of the emergency funding request to address this laboratory capacity building.

The Honorable Jan Schakowsky

1. **I want to make sure federal dollars are being used properly to prevent the spread of Ebola. Education and training front line hospital staff about how to protect themselves from Ebola exposure is vital for nurses and other workers at high risk of workplace exposure to Ebola. Protecting workers at risk of exposure will protect the public safety and strengthen the confidence of the public.**

   How is CDC involving the federal Occupational Safety and Health Administration in its certification or review of hospitals being designated as one of the 50 Ebola treatment centers?

   Response: CDC has worked closely with Occupational Safety and Health Administration (OSHA) throughout the Ebola response to share information and collaborate on ongoing activities to help ensure that employers and affected industries are accurately following applicable health and safety standards, including those in the healthcare settings. Examples of CDC and OSHA collaboration

throughout the Ebola Response include:

- CDC is sharing information with OSHA on how CDC provides technical assistance to prepare hospitals to receive Ebola patients via the Rapid Ebola Preparedness (REP) Teams. The REP teams are multidisciplinary teams of experts—including infection control practice specialists, personal protective equipment specialists, worker safety experts, clinical care and diagnostics experts, and experts in laboratory processes—who assess a facility's infection control readiness and support them in developing a comprehensive infection control plan. OHSA has attended several REP visits with the agreement of hospital and state officials.

- CDC has established a process to share CDC guidance that is in development with OSHA and the labor unions for their review and comment. Similarly, OSHA has provided CDC draft guidance for review prior to posting.

- CDC is collaborating with OSHA to co-brand multiple guidance documents that are currently in development. Recently, the fact sheet "Safe Handling, Treatment, Transport and Disposal of Ebola-Contaminated Waste" was released. This fact sheet was co-branded with OSHA, CDC NIOSH, and EPA.

- CDC also has standing weekly meetings which include representation from OSHA, CDC, CDC NIOSH, and labor to update on ongoing Ebola Response activities and to receive feedback from the labor unions on issues of concern

- OSHA has informed CDC that they are considering how best to formulate their role and function going forward, especially with respect to designation by state officials and listing as Ebola Treatment Centers on the CDC website.

CONTENT ACCURATE AS OF DECEMBER 15, 2014

Attachment 2-Member Requests for the Record

During the hearing, Members asked you to provide additional information for the record and you indicated that you would provide that information. For your convenience, descriptions of the requested information are provided below.

The Honorable Morgan Griffith

1. **During the hearing you acknowledged that the Secretary of HHS is authorized to transfer funding from your department to other departments, and when she does so she is required to tell you that she has transferred those funds. Has Secretary Burwell transferred funds in 2014 from the National Center for Emerging and Zoonotic Infectious Disease?**
   a. **Similarly, has the Secretary transferred money from the CDC's global health programs?**
   b. **Has the Secretary transferred funds from CDC's Public Health Preparedness and Response Division?**
   c. **If funds were transferred from any of the above mentioned divisions, were any of them transferred to help support Obamacare?**
   d. **If funds were transferred from any of the above mentioned divisions, were any of them transferred for children and families to care for increasing number of unaccompanied children who arrived in the United States?**
   e. **For all of the above questions, please provide the origin and destination of the funds, the date the transfers were made, and the amounts that were transferred.**

   Response: HHS reallocated resources to support activities that are vital to accomplishing the mission of HHS in 2014. Funds were transferred from CDC accounts in April 2014 to the CMS Program Management account and the ACF Refugee and Entrant Assistance account. Specifically, transfers were made of (1) $0.792 million out of the Emerging and Zoonotic Infectious Disease account; (2) $1.056 million out of the Global Health account within HHS; and (3) $3.647 million out of the Public Health Preparedness and Response account within HHS. CDC defers to CMS and ACF on the uses of funds in their accounts.

2. **How many sit-down, face-to-face meetings have you had with Ron Klain?**
   a. **Please provide the dates that you met with Mr. Klain and the topic of discussion.**

   Response: I would regularly meet with Mr. Klain, as well as talk with him by phone and video conference, to discuss the response to the Ebola epidemic in West Africa and cases of Ebola and Ebola preparedness in the United States.

FRED UPTON, MICHIGAN
CHAIRMAN

HENRY A. WAXMAN, CALIFORNIA
RANKING MEMBER

ONE HUNDRED THIRTEENTH CONGRESS

Congress of the United States
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COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6115
Majority (202) 225-2927
Minority (202) 225-3641

December 9, 2014

Dr. Nicole Lurie
Assistant Secretary
Preparedness and Response
U.S. Department of Health and Human Services
200 Independence Avenue, S.W.
Washington, D.C. 20201

Dear Dr. Lurie:

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Sincerely,

Tim Murphy
Chairman
Subcommittee on Oversight and Investigations

cc: Diana DeGette, Ranking Member, Subcommittee on Oversight and Investigations

Attachments

Nicole Lurie, MD, MSPH
Assistant Secretary of Preparedness and Response
Update on the U.S. Public Health Response to the Ebola Outbreak
House Committee Energy & Commerce Subcommittee on
Oversight & Investigations
November 18, 2014
Questions for the Record

The Honorable Ben Ray Lujan:

Q: Can you speak to the present and future role the National Labs play in our response to the Ebola crisis and similar outbreaks? Do you expect any of the funding in this request to go to the National Laboratories – either directly or through partnerships?

A: The Department of Energy's (DOE) national laboratories and technology centers participated in modeling discussions during the Department of Health and Human Services' (HHS) response to the Ebola epidemic in West Africa. HHS engaged with DOE through the Biomedical Advanced Development and Research Authority (BARDA) within the Office of the Assistant Secretary for Preparedness and Response (ASPR) to provide computational analytical services on several areas related to the Ebola response, such as:

- determining breaking points for receiving hospitals and controlled degradation of care;
- assessing the supply chain for in country resiliency;
- investigating the impact of Ebola genetic selection on the efficacy of diagnostics, therapeutics, and vaccines;
- assessing strategic factors for spillover risk and consider the likelihood of a subsequent large Emerging Infectious Disease (EID) outbreak; and,
- determining the level of surveillance and under reporting.

Also, within the Department of Health and Human Services, our colleagues at CDC have been collaborating with interagency partners to develop a cohesive strategy for building sustainable laboratory capacities in West Africa. Specifically, they have been working with the DOE's Sandia National Laboratory (SNL) to coordinate and leverage expertise and resources in response to laboratory needs in the affected countries (Please see HHS CDC QFR response).

The Honorable Michael Burgess, MD:

Q: During the hearing, you mentioned that we have not declared a national emergency; therefore FEMA has not been activated. Alternatively, in coordination with partners

across the Federal Government you have been doing "aggressive planning" for the what-ifs. Please provide the committee with the details of that planning.

A: ASPR is the Emergency Support Function (ESF) 8 Coordinator and Primary Agency for ESF 8 (Public Health and Medical) of the National Response Framework and for the Health and Social Services Recovery Support Function of the National Disaster Recovery Framework. ASPR provides leadership and support for activities to prepare for, respond to, recover from, and mitigate the impacts of public health and medical incidents. Planning is one key component that supports ASPR's programs and initiatives. With respect to planning for a possible Ebola Virus Disease (EVD) outbreak in the continental United States, ASPR has been involved in numerous efforts to make sure the Federal Government is best positioned to respond should such an outbreak occur. Specific activities include:

- In coordination with partners at the Centers for Disease Control and Prevention (CDC), drafted the HHS Support Plan and Communication Plan for a first case of EVD diagnosed in the United States.
- In coordination with partners at the CDC, continue to draft and finalize the U.S. Government Ebola Virus Disease Plan to provide a framework for an EVD outbreak in the United States.
- In coordination with partners at the Department of Defense and the CDC, support a Department of State-led initiative to develop standard operating procedures and notifications for EVD patient movement.
- In coordination with CDC and other Federal partners, the Federal Emergency Management Agency (FEMA) developed a scalable unified coordination structure to include Federal, state, and local authorities, to support a response to a single EVD event or multiple EVD events (in multiple states)..
- In coordination with FEMA and other interagency partners, reviewed the support that would be provided to the lead Federal Agency and the resources available in the first 72 hours of multiple EVD cases.
- Leading up to the African Leaders Summit in August 2014, ASPR discussed contingency planning for the National Capital Region in case one of the delegates from an African nation developed symptoms resembling Ebola. The procedures provided for enhanced medical surveillance, hospital incident tracking, and epidemiologic investigation.
- In coordination with partners at the Department of Veterans Affairs (VA), advised on plans for VA facilities to screen suspected EVD patients, care for confirmed EVD patients, and on interaction between VA and non-VA facilities designated for EVD patient use.

In addition, ASPR has participated in a number of exercises and training events to test planning assumptions, identify existing gaps, and strengthen planning efforts as needed. Specific activities include:

- Participated in a SOUTHCOM table top exercise in Miami, Florida assessing roles and responsibilities of the interagency in the event of an EVD event.
- Participated in a Maryland table top exercise in Baltimore, Maryland assessing roles and responsibilities of the local and state agencies in the event of an EVD event.

- Participated in a Federal table top exercise for the Domestic Resilience Group at the White House assessing roles and responsibilities of the Federal Departments in the event of an EVD event.
- Participating in an interagency Latin American/Caribbean EVD planning effort. Reviewing actions to inhibit mass migration, assisting the Department of Homeland Security's Customs and Border Protection to determine medical screening and processing support, and assisting U.S. Coast Guard in determining maritime medical screening and treatment guidance for para-professional medical providers.

BARDA has developed infrastructure crucial for medical countermeasure development and response capabilities. This infrastructure includes a Nonclinical Studies Network, Centers for Innovation in Advanced Development and Manufacturing, a Fill Finish Manufacturing Network, and a Clinical Studies Network to provide core service assistance to developers of medical countermeasures on an everyday basis. Conversely, during a public health emergency like Ebola, these resources are then activated for response. BARDA's modeling capabilities have helped measure domestic hospital capacity and forecast the impact of the Ebola disease burden and vaccination efforts in affected West African countries. Investments made to our medical countermeasure infrastructure since 2010 have paid off domestically and globally during the current Ebola epidemic by developing, manufacturing, and evaluating Ebola medical countermeasure candidates. Furthermore, they have helped better prepare us for future response efforts and have provided needed flexibility when dealing with new and prospective challenges.

FRED UPTON, MICHIGAN
CHAIRMAN

HENRY A. WAXMAN, CALIFORNIA
RANKING MEMBER

ONE HUNDRED THIRTEENTH CONGRESS

Congress of the United States
House of Representatives
COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6115
Majority (202) 225-2927
Minority (202) 225-3641

December 9, 2014

Rear Admiral Boris Lushniak, M.D.
Acting Surgeon General
U.S. Department of Health and Human Services
200 Independence Avenue, S.W.
Washington, D.C. 20201

Dear Dr. Lushniak:

Thank you for appearing before the Subcommittee on Oversight and Investigations on Tuesday, November 18, 2014, to testify at the hearing entitled "Update on the U.S. Public Health Response to the Ebola Outbreak."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions with a transmittal letter by the close of business on Tuesday, December 23, 2014. Your responses should be mailed to Brittany Havens, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, D.C. 20515 and e-mailed in Word format to brittany.havens@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Tim Murphy
Chairman
Subcommittee on Oversight and Investigations

cc: Diana DeGette, Ranking Member, Subcommittee on Oversight and Investigations

Attachment

Additional Questions for the Record

Rear Admiral Boris D. Lushniak, M.D., M.P.H.

Acting Surgeon General of the United States

U.S. Department of Health and Human Services

"Update on the U.S. Public Health Response to the Ebola Outbreak"

House Energy and Commerce Committee

Subcommittee on Oversight and Investigations

November 18, 2014

The Honorable Ben Ray Lujan

I. What's happening in West Africa is a tragedy. Recently, the World Health Organization announced that this unprecedented Ebola outbreak had claimed the lives of over 5,000 people and that more than 14,000 have been infected. Meanwhile, the public health infrastructure in these countries, which was already poor, is increasingly strained. The World Bank reports this outbreak could cost West Africa $33 billion over the next two years.

Clearly, we have a moral responsibility to address this crisis. But defeating Ebola at its source is also vital to ensuring the safety of the American people. The Administration has correctly asked for a robust funding package to address this crisis. It is my hope and expectation that Congress will act on this request quickly.

However, the current Ebola crisis also demonstrates the importance of robust investments in our nation's public health infrastructure and in our research and development institutions. In my home state of New Mexico, our National Laboratories have developed genetic sequencing, low cost rapid pathogen assays, and computer models for how diseases spread.

Can you speak to the present and future role the National Labs play in our response to the Ebola crisis and similar outbreaks? Do you expect any of the funding in this request to go to National Laboratories – either directly or through partnerships?

The Department of Health and Human Services' Office of the Assistant Secretary for Preparedness and Response (ASPR) and its Centers for Disease Control and Prevention (CDC) have been working with the Department of Energy's National Laboratories during the Ebola response. For a further description of these efforts, please see ASPR's and CDC's responses to questions for the record.

FRED UPTON, MICHIGAN
CHAIRMAN

HENRY A. WAXMAN, CALIFORNIA
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Minority (202) 225-3641

December 9, 2014

Mr. Ken Isaacs
Vice President
Programs and Government Relations
Samaritan's Purse
P.O. Box 3000
Boone, NC 28607

Dear Mr. Isaacs:

Thank you for appearing before the Subcommittee on Oversight and Investigations on Tuesday, November 18, 2014, to testify at the hearing entitled "Update on the U.S. Public Health Response to the Ebola Outbreak."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

Also attached are Member requests made during the hearing. The format of your responses to these requests should follow the same format as your responses to the additional questions for the record.

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Sincerely,

Tim Murphy
Chairman
Subcommittee on Oversight and Investigations

cc: Diana DeGette, Ranking Member, Subcommittee on Oversight and Investigations

Attachments

Ken Isaacs
Vice President of Programs and Government Relations
Samaritan's Purse

Response to Questions for the Record
Oversight and Investigations Hearing, November 18, 2014
"Update on the U.S. Public Health Response to the Ebola Outbreak"

Attachment 1 –Additional Questions for the Record

Gentlemen, I have taken the Liberty of breaking the first set of questions down and answering each below:

- **Can you talk about what steps are taking place to ensure that our nation's hospitals and frontline healthcare workers are prepared and have the proper resources, included (ing) adequate protective gear?**

Before the Dallas incident where two nurses became infected while providing care for Thomas Duncan while a patient at Texas Health Presbyterian Hospital, our nation's hospitals and healthcare workers were not prepared to provide care in Level 4 disease, i.e., Ebola. CDC has since issued a series of Health Alerts Network advisories but I cannot speak as to whether these alerts have been disseminated, read, or implemented. The obvious lack, other than the apparent lack of proper gear, was that the staff, which I believe to be representative of the medical staff in hospitals nationwide, were are not sufficiently trained.

- **What do you think we have learned from the cases at Texas Health Presbyterian Hospital**

The experience in Dallas at the Texas Health Presbyterian Hospital affirmed our doubts. When Mr. Duncan sought care for the severe illness that was overtaking him his case was badly mismanaged. As a direct result numerous healthcare workers and members of the community were exposed to Ebola virus. The fact that 'just' two nurses, of all those potentially exposed, became infected speaks of devine intervention. That two hospital based, intensive care nurses became infected bears strong witness to the point that most U.S. based professional healthcare staff at the time, were neither properly equipped nor adequately trained to safely care for patients with advanced infectious disease. I do not believe that, as of this time, that our healthcare system is adequately prepared or trained.

- **"Do you believe additional steps are needed to ensure our hospitals and healthcare workers are prepared/"**

Every healthcare facility in the U.S. should be equipped to meet the advanced isolation requirements necessary to safely house and provide a platform for care of patients that may present with advanced illness from highly infectious disease agents. Staffs likewise should receive regularly scheduled advanced training in the provision of care for such patients while simultaneously receiving hands on training in the donning, providing care while wearing, and

doffing of the personal protective equipment necessary to protect them from exposure to infection.

- **"Further, can you elaborate further on what resources are yet needed, or where we should be focusing our efforts at the United States responds to the Ebola outbreak in West Africa?**

United States lacks a dedicated logistics supply line into and out of West Africa. Practically this means that the entire relief effort to fight Ebola is contingent on the commercial interest of two aviation companies. If for any reason it was in the commercial interest of these companies to stop flying to West Africa, then a United Nations air bridge or a potential military air bridge would need to be established. Based on our experience with crisis response, and specifically with fighting Ebola, we feel it is important and strategic to have a dedicated air bridge to move equipment, supplies and personnel in and out of the affected area as needed and when needed. Secondly, it is essential that responses be nimble and quick in order to stay abreast of the ebbs and flows of the disease. This requires mobile response capability to enter newly identified areas of infection, isolate and treat the infected, trace and monitor contacts, and accurately and quickly test for EVD in suspected cases.

ADDENDUM TO QUESTIONS FOR THE RECORD

Mr. Ken Isaacs

Vice President, Programs & Government Relations

Samaritan's Purse

The Honorable Tim Murphy

1. **During the hearing there was discussion about whether there is a sufficient level of granularity included in the Administration's supplemental funding request. Are you aware of an implementation plan for the administration's proposal? Please provide the committee with specific recommendations that you have regarding the Administration's budget request.**

I am not aware of the implementation plan for the administration's proposal other than that the majority is designated for domestic preparations.

December 9, 2014

Dr. Jeffrey P. Gold
Chancellor
University of Nebraska Medical Center
986380 Nebraska Medical Center
Omaha, NE 68198

Dear Dr. Gold:

Thank you for appearing before the Subcommittee on Oversight and Investigations on Tuesday, November 18, 2014, to testify at the hearing entitled "Update on the U.S. Public Health Response to the Ebola Outbreak."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

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Sincerely,

Tim Murphy
Chairman
Subcommittee on Oversight and Investigations

cc: Diana DeGette, Ranking Member, Subcommittee on Oversight and Investigations

Attachments

University of Nebraska Medical Center

OFFICE OF THE CHANCELLOR
Jeffrey P. Gold, M.D., Chancellor

December 23, 2014

The Honorable Tim Murphy
Chairman Subcommittee on Oversight and Investigations
Attention: Brittany Havens, Legislative Clerk
Committee on Energy and Commerce
2125 Rayburn Building
Washington, DC 20515

Dear Congressman Murphy:

Thank you again for the opportunity to testify at the November 18, 2014 hearing on "Update on the U.S. Public Health Response to the Ebola Outbreak".

Below are responses to the follow-up requests submitted by the Committee members from the hearing.

The Honorable Michael C. Burgess

1. In your written testimony, you state that CDC has not provided any money for their upkeep. Have you received funding from any other part of the federal government for this maintenance?

ANSWER- No, the University of Nebraska Medical Center and our hospital partner Nebraska Medicine (UNMC/NM) do not have a contract with the CDC or any federal agency to maintain the readiness status or upkeep of the Nebraska Biocontainment Unit. The upkeep and training costs have been funded mostly by UNMC/NM with a small amount of limited funding from the State of Nebraska. This has been the case since 2005, when the BCU was opened.

2. Again in your written testimony you stated the cost has been $1.16 million to treat just two Ebola patients, how much of this are you having to cover out of pocket?

ANSWER - At this point, since the University of Nebraska Medical Center/Nebraska Medicine has not received payment from anyone for the treatment of three Ebola patients, UNMC/NM has fronted the entire expense of the treatment. Two of the Ebola patients treated at UNMC will be handled as workman compensation cases and those negotiations have begun, but at this time have not been completed. The third patient did not have insurance coverage and will be a self-pay patient. While we understand there is private fundraising occurring to pay for the costs of that care, we anticipate it will not raise enough to cover the costs of care.

a. How much is being reimbursed by private insurance?

ANSWER- As of December 15, 2014, UNMC/Nebraska Medicine has not received payments from any third parties or individuals for any of the three patients treated for Ebola. Costs have exceeded charges.

986605 Nebraska Medical Center / Omaha, NE 68198-6605
402-559-4200 / FAX: 402-559-4396 / www.unmc.edu

b. Does this represent incidental costs the hospital has acquired?

ANSWER – No. Currently each is considered an active open account that has a balance due.

Please note that these clinical funding matters as well as the educational and preparedness coverage has been specified in detail in our requests shared with the Department of Health & Human Services, Department of Defense and others (appendix A).

The Honorable Ben Ray Lujan

1. We have a responsibility to ensure that our hospitals and our front-line healthcare professional s are equipped to safely handle a potential Ebola case. Your testimony indicates that we must not lose focus on addressing the crisis in West Africa or ensuring that our own infrastructure is appropriately prepared.

Recently, I heard from a constituent whose daughter had worked in a state public health lab where she trained lab workers on how to properly respond if they found dangerous biohazard threats, such as Ebola.

The daughter told my office it was difficult to find protective gear that fit certain body types, particularly smaller individuals. And I think we can agree ill-fitting gear exacerbates the challenges associated with conducting activities that, even in properly fitting safety gear, can be difficult for those with limited experience wearing such gear.

Further, after an Ebola scare at the Christus St. Vincent Regional Medical Center in Santa Fe, the hospital's nurses expressed concerns with the adequacy of their training and preparation.

Before this incident, the hospital had not held a drill simulating a biological or chemical disaster or provided training to emergency staff on using their protective gear since April.

Can you talk about what steps are taking place to ensure that our nation's hospitals and front-line healthcare workers are prepared and have the proper resources, included adequate protective gear?

ANSWER- The University of Nebraska Medical Center (UNMC) firmly advocates that regular training and drills maintain skill proficiencies. Since UNMC/NM opened the Nebraska Biocontainment Unit in 2005 the staff of our unit meets monthly to review the status of the unit, review literature and research to determine if it could improve the Biocontainment Unit and provide updates on protocols the unit may implement. Then quarterly, since 2005, the Nebraska Biocontainment Unit conducts drills that involve hospital personnel and local Emergency Management Technicians with the area ambulance service. The drills have also involved County Health Department personnel, State Emergency Management personnel, and others. The Nebraska Biocontainment Unit is planning a drill with the U.S. Air Mobility Command headquartered at Scott Air Force Base.

Shortly after opening the Nebraska Biocontainment Unit in 2005, UNMC developed the "UNMC Hero's" website at https://app1.unmc.edu/nursing/heroes which has been online and accessible to any provider.

As a result of the demand for access to UNMC's protocols due to the Ebola Crisis, UNMC teamed with Apple and distributed all the "UNMC HEROES" materials on Apple iTunes University. This allowed health care providers to easily access UNMC's operational protocols and procedures. By teaming with Apple iTunes University anyone who registered for the materials receive automatic updates anytime new materials are added. UNMC went one step further and developed a site for the general public to serve as

a way to answer frequently asked questions about Ebola and inform citizens of what they could do if necessary to deal with Ebola.

The clinicians' course is available now via the iTunes U app for iPad and iPhone, through this direct link -- https://itunesu.itunes.apple.com/enroll/FDL-BXP-WTF -- or by searching in iTunes U. The course also is available through Moodle at http://phtc.unmc.edu/moodle for viewing on a desktop, laptop or other mobile devices. There is no cost to receive or access the training materials and protocols.

The course for the general public is available at unmc.edu/ebola, through the iTunes Store, and the iTunes University app for those with iPads or iPhones. Much of the information in the course also is presented in Spanish.

As one of the leading institutions in the nation on readiness and preparedness in training for and responding to highly infectious diseases UNMC, at the invitation of CDC, has been providing training courses for hospitals that are among the proposed future treatment centers. This past week UNMC held training for a dozen leading national children's hospitals, helping to prepare for pediatric care. UNMC has suggested that, as a leader in highly infectious disease, we continue teaming with the federal government to deliver the training to our nation's hospitals. One of the reasons UNMC was able to disseminate our training and protocols quickly and begin providing training to other institutions is our philosophy that our training helps minimize the risk of dealing with highly infectious diseases. UNMC believes that is how other institutions should be trained so they are also ready when the crisis occurs. UNMC and Emory University have already been collaborating with the CDC on the curriculum for a training course. As a first step, UNMC and Emory experts have been invited to participate in CDC site visits to potential new Ebola treatment centers.

UNMC also advocates strongly the creation an independent national accreditation/certification program to help ensure that hospitals that receive the training maintain their skill levels in the future so that the nation is not caught off-guard by the next threat from a highly infectious disease. An accreditation program will also help ensure that the money spent on the training now is truly useful in the future.

What do you think we have learned from the cases at Texas Health Presbyterian Hospital? Do you believe additional steps are needed to ensure our hospitals and healthcare works are prepared?

ANSWER- Yes, additional steps are needed to ensure preparedness. It is more important than ever that we implement a national training and accreditation program in readiness to respond to highly infectious diseases. Highly infectious diseases are dangerous and we must make sure that the proposed new treatment hospitals, the referral hospitals and the community hospitals are each trained to the level of the risk they may deal with. The nation's hospitals have been asking UNMC and Emory, as the leading providers, for that training. We recommend the federal government consider naming UNMC and Emory as the lead training and treatment centers of excellence to work with the federal agencies to deliver the national training program.

UNMC strongly advocates that an independent accreditation/certification program be established to ensure that the expense spent on developing the skill levels and constructing units at the future additional treatment centers are maintained and ready when the next infectious disease threat occurs.

Further, can you elaborate further on what resources are yet needed, or where we should be focusing our efforts as the United States responds to the Ebola outbreak in West Africa?

ANSWER- While the hospitals in the United States must be trained and there needs to be an accreditation/certification to ensure the readiness level is maintained, it is extremely important that the U.S. do all it can to stop the spread of the disease in Africa. The international effort is a vital component. Also extremely important is the need to develop better and faster diagnostic tests for confirming highly infectious disease infections. UNMC and others are working on improved diagnostics. Last, but not least, the development of a vaccine and the associated clinical trials are of extreme importance as well.

Please note, that the biocontainment clinical funding matters as well as the educational and preparedness coverage has been specified in detail in our requests shared with the Department of Health & Human Services, Department of Defense and others (appendix A).

The Honorable Tim Murphy

1. You mentioned during the hearing that you don't believe a sufficient level of granularity has been included in the Administration's supplemental funding request. Are you aware of an implementation plan for the administration's proposal? Please provide the committee with specific recommendations that you have regarding the Administration's budget request.

ANSWER – We have been in regular discussion with officials at HHS and CDC. We understand that, as required by the legislation, they are currently preparing a detailed spend plan to be submitted within the next 30 days that will provide more details.

Suggestions we have mentioned and hope would be considered in the areas of training, patient care and reimbursement and facility design.

UNMC is both a leading authority in training and treatment in highly infectious diseases. Institutions from across the nation are contacting those of us who have treated patients and are active operational biocontainment units to help them prepare or deal with situations occurring in their areas of the country. CDC is working with UNMC and Emory to develop the training curriculum. We would hope the agencies would identify UNMC and Emory as the lead training and treatment centers to deliver the training to the nation's hospitals. As the leading providers, we have the hands on experience, and with the collaboration developed with HHS, ASPR and CDC we believe it would be most valuable for us to be the lead training institutions.

Facility design is important. It is important that the funds that will be made available to help institutions construct a facility match type of risk they may face. As part of the national training, it is important that facility design included as part of preparedness and planning to help ensure the facility operates safely for the patients, health professionals and safely for the environment.

To ensure long-term preparedness UNMC recommends establishing a national training facility to help ensure that there is an ongoing commitment to preparedness and readiness against either naturally occurring highly infectious diseases or a weaponized virus. UNMC suggests the establishment of a national Center of Excellence for BioPreparedness and Health Security tasked with providing ongoing continuing education and readiness training for hospitals; a highly infectious disease treatment center

capable of handling a surge of patients; and a research wing focused on developing medical countermeasures for civilian and military use is needed.

On the area of patient reimbursement, we have had initial discussions with HHS regarding what might be potential methods to reimburse treatment centers for unreimbursed costs associated with treating patients with Ebola and other highly infectious diseases. It is important that HHS work directly with the institutions that are experiencing this serious issue.

Please note, that the biocontainment clinical funding matters as well as the educational and preparedness coverage has been specified in detail in our requests shared with the Department of Health & Human Services, Department of Defense and others (appendix A).

Sincerely,

[redacted]

Jeffrey P. Gold
Chancellor

JPG/mb

APPENDIX A
The University of Nebraska Medical Center-Nebraska Medicine
(UNMC/NM)

Establishment of a National Center of Excellence for BioPreparedness and Health Security

Request #1 - Designation as a Center of Excellence or National Center for Training in BioPreparedness and Health Security

UNMC will seek to be recognized by HHS as a national center of excellence for training, treatment and research in highly infectious diseases, such as Ebola virus. UNMC was one of the only medical centers in the nation, other than Emory University, that was actually ready to respond and successfully handle highly infectious patients.

UNMC immediately became a national resource in treatment protocols and providing treatment consultations to New York Bellevue Hospital as well as an information bank resource to hundreds of hospitals seeking advice on everything from screening to training to construction requirements. UNMC is the leading institution in preparing for and safely responding to highly infectious disease threats.

- UNMC is globally recognized as the "gold standard" as the place to be treated and trained in highly infectious disease preparation and education.
- UNMC clinical Inter-professional team of experts has coordinated with CDC and Emory to create the curriculum for facilities.
- UNMC has a large cohort of prestigious hospitals and leadership teams that is already requesting to come to UNMC for BCU training.
- UNMC is currently training health care facility leaders and health care professionals across the country. The feedback from the institutions has affirmed the critical nature of this type of educational program.
- UNMC has well established clinical simulation environments to facilitate high quality efficient training of teams for Ebola and other hazardous infectious agents.
- UNMC has developed in conjunction with Apple Computer and Emory a widely used set of web/mobile tools in the area of Biocontainment preparation and management using state of the art references and clinical experience.

As part of the national designation, UNMC would also seek federal assistance to build a facility to help the nation's federal agencies and hospital providers maintain their knowledge, skills and readiness level in the future. We would create an independent accreditation program with the CDC to ensure proficiency skill levels are maintained, expand our current research in countermeasures to highly infectious diseases and include a permanent training facility so the nation is fully prepared for naturally occurring and weaponized infectious outbreaks in the future.

The items listed below will all be enhanced and optimally coordinated through the designation of a National Center of Excellence.

Request #2 - National Training and Site Assessment
UNMC will seek from HHS/CDC ongoing sustaining funds for training and performance assessment of the UNMC Biocontainment Unit and as well, for other CDC designated hospitals, clinics and health care professionals. The UNMC BCU has maintained a state of readiness for the past decade and will hopefully continue to do so.

In so doing, we will establish an Interprofessional Educational Program for health profession students, residents and fellows to insure a core of the future generation of formally educated and ongoing preparedness group of professionals and site leaders.

While UNMC currently has a limited initial contract with CDC to support ongoing outside educational activity, UNMC will seek and need a sustaining contract to maintain our expertise and to provide the training to hospitals and health care professionals across the nation.

Request #3 - Construction Funds to Immediately Expand the Current UNMC Biocontainment Unit
Early in this crisis, HHS Sec. Burwell asked how and what UNMC needed to expand the Biocontainment Unit to care for ten or more Ebola patients. The site selection and planning for this has been completed pending the approval and funding commitment.

UNMC will seek construction funds from HHS to start that expansion. The legislation provided funds for construction at the proposed future treatment centers. At this point, we do not know what process the HHS may make those funds available, but regardless, UNMC will ask that our project be among the first applications approved. UNMC already has the blueprints and space identified. UNMC is the largest current Biocontainment Unit in the nation and a well trained workforce prepared to deal with the full spectrum of hazardous infections agents. Therefore, it would be most efficient for us to increase the number of beds quickly.

Request #4 -Clinical Care Reimbursement for Costs of Patient Care in the UNMC Biocontainment Unit and in Consultative BCU Settings
Payment for use of facilities and professional services for the patients that we have cared for and for those that may follow consistent with our costs of providing those services both within our BCU and when consultative facility and professional services are requested for patient care at other institutions.

Request #5 - The Military Components of Preparedness and Biocontainment
Each of the interlocking requests described above also applies fully to the unique current and future needs of the U.S. military. As a Department of Defense (DoD) authorized University Affiliated Research Center (UARC) that specializes in biological threats and medical

countermeasures for the Department of Defense, UNMC intends to seek a "Readiness Agreement" with the DoD to provide training for military units and to provide treatment for military personnel who contract a highly infectious disease.

The DoD officials have already indicated that they intend to send U.S. troops who are exposed or who become infected during deployment to the existing US facilities that have successfully treated civilians which would be either UNMC, Emory or NIH. The DoD is also developing mobile containment systems to be able to transport four or more infected military patients together if necessary. Currently the only facility in the US that has any chance of handling four Ebola patients at one time is UNMC. Under that scenario, it is even more important that UNMC be authorized and funded to expand our current Biocontainment Unit as soon as possible.

FRED UPTON, MICHIGAN
CHAIRMAN

HENRY A. WAXMAN, CALIFORNIA
RANKING MEMBER

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December 9, 2014

Dr. David Lakey
Commissioner
Texas Department of State Health Services
P.O. Box 149347
Austin, Texas 78714-9347

Dear Dr. Lakey:

Thank you for appearing before the Subcommittee on Oversight and Investigations on Tuesday, November 18, 2014, to testify at the hearing entitled "Update on the U.S. Public Health Response to the Ebola Outbreak."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

Also attached are Member requests made during the hearing. The format of your responses to these requests should follow the same format as your responses to the additional questions for the record.

To facilitate the printing of the hearing record, please respond to these questions and requests with a transmittal letter by the close of business on Tuesday, December 23, 2014. Your responses should be mailed to Brittany Havens, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, D.C. 20515 and e-mailed in Word format to brittany.havens@mail.house.gov.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Tim Murphy
Chairman
Subcommittee on Oversight and Investigations

cc: Diana DeGette, Ranking Member, Subcommittee on Oversight and Investigations

Attachments

TEXAS DEPARTMENT OF STATE HEALTH SERVICES

P.O. Box 149347
Austin, Texas 78714-9347
1-888-963-7111
TTY: 1-800-735-2989
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DAVID L. LAKEY, M.D.
COMMISSIONER

December 19, 2014

The Honorable Tim Murphy
Chairman
Subcommittee on Oversight and Investigations
Congress of the United States
Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, DC 20515-6115

Dear Congressman Murphy:

Thank you for the opportunity to respond to the questions from the members of the Subcommittee on Oversight and Investigations subsequent to my November 18, 2014, testimony on the ebola outbreak in Dallas, Texas.

Attached you will find the questions and my responses in the format requested. Please let me know if you, or any of the other members have any additional questions. I may be reached at [redacted] or [redacted].

Sincerely,

[redacted]

David L. Lakey, M.D.
Commissioner

Dr. David Lakey
Commissioner
Texas Department of State Health Services
December 17, 2014
U.S. House Committee on Energy and Commerce
Update on the U.S. Public Health Response to the Ebola Outbreak

The Honorable Michael C. Burgess

Can you discuss the impact on the local public health capacity, in terms of man power and resources, tracking these cases of Ebola have had in North Texas?
a. Back in October the cost was placed at $1 million to the state, has it increased since then?
b. Is this including the cost to Texas Health Resource?

Commissioner David L. Lakey, M.D. – response to the Honorable Michael C. Burgess:

Throughout the Ebola response in North Texas, public health capacity was supplemented by state and federal man power and resources. This surge capacity is critical to public health and emergency response in the state. While this was manageable, public health capacity in North Texas could have become an issue if more Ebola cases had been diagnosed in the area. Additionally, if another large-scale emergency response effort had been required, capacity for a two-front or statewide response would likely have been challenging.
a. The cost to the state has remained close to $1 million.
b. This does not include cost to Texas Health Resources, or other hospitals that provided care for Ebola patients.

The Honorable Ben Ray Lujan

We have a responsibility to ensure that our hospitals and our front-line healthcare professionals are equipped to safely handle a potential Ebola case. Your testimony indicates that we must not lose focus on addressing the crisis in West Africa or ensuring that our own infrastructure is appropriately prepared.

Recently, I heard from a constituent whose daughter had worked in a state public health job where she trained lab workers on how to properly respond if they found dangerous biohazard threats, such as Ebola.

The daughter told my office it was difficult to find protective gear that fit certain body types, particularly smaller individuals. And I think we can agree ill-fitting gear exacerbates the challenges associated with conducting activities that, even in properly fitting safety gear, can be difficult for those with limited experience wearing such gear.

Further, after an Ebola scare at the Christus St. Vincent Regional Medical Center in Santa Fe, the hospital's nurses expressed concerns with the adequacy of their training and preparation.

Before this incident, the hospital had not held a drill simulating a biological or chemical disaster or provided training to emergency staff on using their protective gear since April.

Can you talk about what steps are taking place to ensure that our nation's hospitals and frontline healthcare workers are prepared and have the proper resources, included adequate protective gear? What do you think we have learned from the cases at Texas Health Presbyterian Hospital? Do you believe additional steps are needed to ensure our hospitals and healthcare works are prepared?

Further, can you elaborate further on what resources are yet needed, or where we should be focusing our efforts as the United States responds to the Ebola outbreak in West Africa?

Commissioner David L. Lakey, M.D. – response to the Honorable Ben Ray Lujan:

In Texas, the work to ensure our nation's hospitals and frontline healthcare workers are prepared and have the proper resources has already begun. The Texas Department of State Health Services (DSHS) has issued guidance for health care workers, emergency responders, and facilities through a website dedicated to Ebola, www.texasebola.org.

DSHS is also conducting an assessment of facilities and Emergency Medical Services (EMS) providers to determine Texas' capacity to handle Ebola or other high consequence infectious disease in the future. This effort is in line with the Centers for Disease Control and Prevention's (CDC's) three-tier approach to Ebola hospitals. The results of this assessment will inform further efforts to ensure facilities and front line workers are trained and equipped for future events.

Finally, the Texas Task Force on Infectious Disease and Response created by Governor Rick Perry has issued its report with recommendations related to infectious disease response in Texas. The Texas Legislature and state agencies are currently assessing the report, and other analyses of public health preparedness in Texas to determine what improvements can be made to the current system. The Task Force's report is available at: www.governor.state.tx.us/news/press-release/20375/.

The Honorable Tim Murphy

During the hearing there was discussion about whether there is a sufficient level of granularity included in the Administration's supplemental funding request. Are you aware of an implementation plan for the administration's proposal? Please provide the committee with specific recommendations that you have regarding the Administration's budget request.

Commissioner David L. Lakey, M.D. – response to the Honorable Tim Murphy

At this point, DSHS is not aware of an implementation plan regarding the Ebola funding that will be distributed to the states. Federal entities should engage state health officials as methods of distribution and goals for those funds are determined. Additionally, funding should focus on high consequence infectious disease, rather than only Ebola. Funding should focus on a

sustained plan for ensuring public health preparedness and capacity; public health preparedness depends on a predictable infrastructure of expertise, equipment, and manpower that can flexibly surge in a wide variety of emergency incidents.

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