

Global Health Security

[Announcer] This program is presented by the Centers for Disease Control and Prevention.

[Sarah Gregory] Today, I'm talking with Dr. Jordan Tappero about his article on the state of global health security. Dr. Tappero is a Rear Admiral in the U.S. Public Health Service and Senior Advisor in global health at CDC. Welcome, Dr. Tappero.

[Jordan Tappero] Thank you very much. It's a pleasure to be here.

[Sarah Gregory] EID has partnered with the Center for Global Health and other CDC centers to publish a special edition of the journal that focuses solely on global health security. Tell us about what's in this issue and why it's important to publish it.

[Jordan Tappero] The world is at ever-increasing risk from infectious disease threats. We've seen many just in the past few years. I think that CDC's response to the Ebola epidemic in West Africa that took two years to complete from 2014 to 2016 was a real game changer for how the public has consciousness about the work that we do in health security. But that's just one example. We have the chikungunya virus and the Zika virus outbreaks in the western hemisphere, over the past two years. We've had a resurgence of yellow fever in Angola and Brazil, and even avian influenza in China. So there are many such examples about why we need to identify infectious disease threats at their source and protect American populations from their spread to our shores.

[Sarah Gregory] What are the public health implications of global outbreaks, endemics, pandemics, and epidemics?

[Jordan Tappero] First of all, these infectious disease threats can be prevented, or at least mitigated, at their source. When they don't, then increasing number of people are at risk of serious illness and death. So that is first and foremost. We are in the business of saving lives.

Secondly, the economic impact of a large outbreak, regional epidemic, or pandemic are astronomical. It is estimated that, in the twenty-first century, a large pandemic—like what we saw with Spanish influenza back in 1917 and 1918—that epidemic in today's costs would be over six trillion dollars.

[Sarah Gregory] What is CDC's role in protecting Americans and people around the world from these types of threats?

[Jordan Tappero] Let me break that down into two categories. First of all, CDC is very actively engaged in capacity-building efforts with ministries of health and other partners around the world. In this example, we work to train shoe-leather field epidemiologists—or the disease detectives that can go and stop outbreaks when they first arise—and make sure that there is adequate laboratory testing to find out the cause and then begin the efforts of responding to that outbreak. Secondly, when countries are overwhelmed by their own capacity to respond to outbreaks, CDC has a surge capacity. We call that emergency mitigation. Let me give you just two pieces of our emergency mitigation efforts. As you know, the West African Ebola epidemic lasted two years and required over 3,500 deployments, internationally and domestically. To sustain a response of that magnitude was a strain on our agency. So what we learned from that is that we now have a CDC trained Global Rapid Response Team that has over 400 CDC subject matter experts in medical epidemiology, in medical countermeasures, in administration, and public health delivery of services that are rostered and tiered and ready to deploy for up to six months within 24 hours. Another example is our Global

Disease Detection Operations Center. This operations center, over the past decade, has monitored over 1,500 serious public health threats and work closely with WHO, or the World Health Organization, and many other international partners to be poised to respond, if need be. In 2016 alone, we monitored over 130 countries with over 40 different outbreak disease pathogens that had serious potential and, when necessary, responded to them.

[Sarah Gregory] Dr. Tappero, tell me what the World Health Organization's International Health Regulations are and why they came about, and why are they important?

[Jordan Tappero] Well, International Health Regulations were first adopted by WHO so that, when there are big outbreaks that cross borders, there is appropriate response, and at the same time, not inappropriate closure of borders or quarantine when unnecessary to the point that it disrupts economies without an effective intervention. Let's go back to 2002-2003—the Severe Acute Respiratory Syndrome virus that emerged in Asia.

[Sarah Gregory] Is that SARS?

[Jordan Tappero] That's SARS. And over the next four months, it made its way across five continents, resulting in over 8,000 infections and nearly 800 deaths, costing the world's global economy over 40 billion dollars. After SARS was completed, the World Health Organization and its 196 member states looked at what happened during the SARS epidemic and why the world was so slow to detect and respond to SARS as it spread around the globe. The outcome of that was a revision of the International Health Regulations, or IHR, in 2005. All the members under the UN umbrella are bound by treaty to implementing, or becoming compliant with, these revised international health regulations, and the time period started in 2007 with a five year clock that every member state—all 196 countries—should reach compliance with those revised regulations. But as five years rolled around, less than 20 percent of the nations around the world—even through self-report—could state honestly that they had met compliance with the new, revised International Health Regulations. And after a two year extension, only an additional 10 percent of countries were able to even self-report compliance. In short, after a seven year period, 70 percent of the world's countries said that they were not able to respond to a global pandemic or regional epidemic because they had not met compliance with the International Health Regulations.

Now, the International Health Regulations are made up of 19 core capacities. And those core capacities need to be practiced for countries to be able to become compliant. And that's where the Global Health Security Agenda came in.

And the Global Health Security Agenda was launched in February of 2014. And the purpose of the Global Health Security Agenda was to give countries 11 different specific set of core activities that they could practice and improve upon over a period of time. And by doing those activities, they could reach compliance with the International Health Regulation core capacities that address infectious disease threats.

[Sarah Gregory] So how is CDC involved in working with countries to be in compliance with the International Health Regulations?

[Jordan Tappero] When the Global Health Security Agenda was launched in February of 2014, one of the principal goals was to make sure that there was an independent external evaluation at the beginning of implementation of the agenda's activities so that there was a baseline from which to work from, and that that baseline would be conducted by a panel of independent external subject

matter experts so that there would be real external validation of where a country is with regards to compliance with the International Health Regulations.

In 2016, the World Health Organization, with partnership from CDC and many other public health experts, came up with a revised evaluation process for the International Health Regulations. It's called the Joint External Evaluation. Now, the Joint External Evaluation says what the name implies—that a group of subject matter experts in public health would come to a country and participate actively in the evaluation of the baseline of where the country is in its compliance efforts with the 19 core capacities under the International Health Regulations. And then, that serves as a roadmap to identify gaps where countries need either financial or technical assistance to work towards compliance across these core capacities. It's really been a game-changer in how countries can look at honestly where they are and where they need to get to over a fixed period of time in order to make their country able to respond quickly to infectious disease and other health threats and to look for assistance when overwhelmed.

[Sarah Gregory] Why is this health security work important?

[Jordan Tappero] Well, we have seen with ever-increasing frequency the number of serious outbreaks that become regional epidemics or even pandemics. For example, back in 2009, we had the H1N1 Influenza pandemic. Soon thereafter, we saw the emergence of the Middle Eastern Respiratory Syndrome coronavirus that had exported cases to Europe and elsewhere from the Middle East. More recently, we've seen Zika virus, chikungunya virus, and dengue virus cause very large outbreaks in the western hemisphere. So we know that these threats are going to continue to emerge, and we need to be able to respond to them at their source in hopes of decreasing the number of lives lost and the number of countries affected and the economies that are disrupted when these outbreaks go broadly.

[Sarah Gregory] Okay, so what have we achieved so far in advancing global health security?

[Jordan Tappero] Recall that in February of 2014, the Global Health Security Agenda was launched with eleven specific activities. When it was launched, we, the U.S. government, pledged to work in at least 30 countries around the world to help countries implement the Global Health Security Agenda activities and to help countries reach compliance with the International Health Regulations.

The U.S. Government committed to working in those 30 countries, 17 of which became what we call Phase One countries, or countries where we not only provide technical assistance, but actually U.S. government funding through grants and cooperative agreements to work with countries to reach compliance with those specific sets of activities. We've accomplished a great deal over the past four years. For example, we have completed Joint External Evaluations so countries have a baseline and can draw upon subject matter expertise or financial resources from other countries even beyond the United States, as well as from their own treasuries, which is critically important to long-term sustainability. And we've also been able to use a color-coded roadmap that allows countries to see across every single activity where they are on one of five steps—from no compliance, which is red, all the way to full compliance, which is green. And a specific set of milestones are available for countries to select from so that they can do activities that move them from red to green.

[Sarah Gregory] So, tell me, what are the future directions of these global health security programs?

[Jordan Tappero] Well, first of all, the Global Health Security Agenda is a global effort. The United States is one of 60 countries that are currently committed to seeing it be successful. Secondly, in

order to reach International Health Regulation compliance around the world, countries need to do specific activities. They can't just have a list of things they are supposed to accomplish but no practice efforts upon how to accomplish them. And the Global Health Security Agenda provides a clear pathway to International Health Regulation compliance.

[Sarah Gregory] Dr. Tappero, would you care to tell me a little bit about your own personal involvement in all these activities?

[Jordan Tappero] Certainly. I came to CDC 26 years ago as an Epidemic Intelligence Service Officer. The Epidemic Intelligence Service is a two-year training program in disease detective work. Largely, we're trained in how to respond to outbreak investigations, identify risk factors for infectious disease threats, and evaluate interventions that we put forward to stop outbreaks quickly. Now, my training in medicine started with the HIV/AIDS epidemic, and that is perhaps the largest global pandemic that we are now still living in. Secondly, over the course of my 25 plus years at CDC, I've been committed to global health work.

Global health is important because infectious disease threats, wherever they arise, can make it to our shores, and we need to be able to protect the American population, as well as populations globally, because it's the right thing to do. I've had the opportunity to work on some remarkable public health responses. One example would be the emergence of cholera in Haiti after the unfortunate earthquake of January 12, 2010. More recently, I was one of the lead first responders for CDC to the Ebola epidemic in West Africa, arriving there in August of 2014 as the World Health Organization declared a Public Health Emergency of International Concern. That was the most frightening response that I have ever been involved in. Fortunately, we used all of our skills and tools and sustained a long response with World Health Organization, the local ministries of health, and other partners and were able to eventually halt that epidemic. We don't need to see these kind of epidemics happen again and again. And that is the passion behind our agency's commitment to the Global Health Security Agenda. We have the experience and the tools and we need to share them with our partners around the globe so that they are better prepared to respond themselves. And, from time to time, when they need our assistance for mitigation efforts, we can also join them in that response.

[Sarah Gregory] Thank you so very much, Dr. Tappero. I've been talking with Dr. Jordan Tappero about his article, U.S. Centers for Disease Control and Prevention and its Partners Contributions to Global Health Security. Listeners can read the entire December global health security supplement article online at cdc.gov/EID. I'm Sarah Gregory for Emerging Infectious Diseases.

[Announcer] For the most accurate health information, visit cdc.gov or call 1-800-CDC-INFO.