

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

MEMORANDUM

October 15, 2014

To: Subcommittee on Oversight and Investigations Democratic Members and Staff
Fr: Committee on Energy and Commerce Democratic Staff
Re: Hearing on “Examining the U.S. Public Health Response to the Ebola Outbreak”

On Thursday, October 16, 2014, at noon in room 2123 of the Rayburn House Office Building, the Subcommittee on Oversight and Investigations will hold a hearing on the ongoing Ebola outbreak in West Africa.

I. BACKGROUND ON EBOLA

Ebola hemorrhagic fever is a severe and often fatal illness caused by the Ebola virus. The disease has an onset time of two days to three weeks after exposure and results in fever, body pain, vomiting, reduced functioning of the liver and kidneys, and internal and external bleeding.¹ Ebola is transmitted only through direct contact with body fluids (blood, sweat, saliva, feces, and urine) of infected individuals and only during the time infected individuals are showing symptoms.² Ebola is not considered to be highly infectious; it is not spread through the air and proper infection control in hospitals can prevent its spread.³

II. THE ONGOING EBOLA OUTBREAK IN WEST AFRICA

¹ World Health Organization, *Ebola virus disease* (updated Sept. 2014) (online at www.who.int/mediacentre/factsheets/fs103/en/).

² Centers for Disease Control and Prevention, *Facts about Ebola* (Oct. 12, 2014) (online at www.cdc.gov/vhf/ebola/pdf/facts-about-ebola.pdf).

³ *No, Seriously, How Contagious Is Ebola?*, NPR (Oct. 2, 2014) (online at www.npr.org/blogs/health/2014/10/02/352983774/no-seriously-how-contagious-is-ebola).

As of October 10, 2014, the Centers for Disease Control and Prevention (CDC) reports that the ongoing Ebola outbreak in West Africa has infected 8,400 individuals and killed 4,033.⁴ These statistics significantly underestimate the actual number of cases, which many believe to be several times higher.⁵ Moreover, the number of affected individuals continues to increase at an exponential rate; case counts in Liberia are doubling every 15 to 20 days, and case counts in Sierra Leone and Guinea are doubling every 30 to 40 days.⁶

The outbreak began in late 2013 with a case in Guinea, and by April 2014 had appeared in a small number of cases in both Liberia and Sierra Leone.⁷ Local health officials were unable to effectively respond, and World Health Organization (WHO) officials were similarly slow.⁸ By July 2014, the number of cases was beginning to grow exponentially.⁹ On September 23, 2014, the CDC released estimates of the anticipated impact of the Ebola epidemic if actions were not taken to address the outbreak, reporting that, by the end of January 2015, the disease could infect as many as 1.4 million people.¹⁰ And earlier this week, the WHO warned that the number of Ebola cases continues to grow exponentially, and that there could be up to 10,000 new Ebola cases each week in West Africa by early December.¹¹

III. CONTROLLING THE SPREAD OF EBOLA

It is possible to control the spread of Ebola through a basic public health approach of diagnosing cases, isolating individuals who are ill and using effective infection control techniques while treating them, tracing all individuals who had contact with the infected individual, monitoring these individuals for symptoms, and isolating these additional individuals

⁴ Centers for Disease Control and Prevention, *2014 Ebola Outbreak in West Africa* (Oct. 10, 2014) (online at www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/index.html).

⁵ *No One Knows Exactly How Bad West Africa's Ebola Epidemic Is*, Vox (Oct. 9, 2014) (online at www.vox.com/2014/10/6/6889037/reporting-ebola-epidemic-virus-outbreak).

⁶ USAID, *West Africa-Ebola Outbreak, Fact Sheet #2* (Oct. 8, 2014).

⁷ *Ebola: Mapping the Outbreak*, BBC News (Oct. 10, 2014) (online at www.bbc.com/news/world-africa-28755033).

⁸ *Out Of Control: How The World's Health Organizations Failed To Stop The Ebola Disaster*, Washington Post (Oct. 4, 2014) (online at www.washingtonpost.com/sf/national/2014/10/04/how-ebola-sped-out-of-control/).

⁹ *Id.*

¹⁰ *CDC: Ebola Could Infect 1.4 million in Liberia and Sierra Leone by January*, Washington Post (Sept. 23, 2014) (online at www.washingtonpost.com/national/health-science/cdc-ebola-could-infect-14-million-in-west-africa-by-end-of-january-if-trends-continue/2014/09/23/fc260920-4317-11e4-9a15-137aa0153527_story.html).

¹¹ *WHO: 10,000 new cases per week could be seen*, Associated Press (Oct. 14, 2014) (online at news.yahoo.com/10-000-ebola-cases-per-week-could-be-seen-124410379.html).

if they show signs of illness.¹² Proper disposal of bodies – which can contain a significant viral load even after death – is also critical to stopping epidemics. This public health approach has worked successfully in controlling all previous outbreaks of Ebola. In the current outbreak, Ebola was transmitted by infected individuals into Nigeria and Senegal, but the public health “isolate and trace” approach successfully restricted the size of the outbreak to only 19 cases in Nigeria and one case in Senegal.¹³

The exponential growth of cases in Liberia, Guinea, and Sierra Leone, combined with collapsing public health infrastructure in these countries, has so far prevented these countries from successfully implementing these methods.

IV. THE UNITED STATES AND INTERNATIONAL RESPONSE IN AFRICA

On September 16, 2014, President Obama announced that 3,000 troops from the U.S. military would lead the U.S. response to the Ebola outbreak in West Africa.¹⁴ Service members – working in conjunction with USAID and CDC officials – will lead efforts to build 17 Ebola treatment units (ETUs) in Liberia and provide equipment and training to local residents and staff in proper Ebola treatment and safe burial practices.¹⁵ There are currently six ETUs operating in Liberia with a total capacity of 580 beds.¹⁶ Similar efforts – led by the U.K. and France – are underway in Sierra Leone and Guinea.¹⁷

¹² Centers for Disease Control and Prevention, *What is Contact Tracing?* (online at www.cdc.gov/media/releases/2014/s930-ebola-confirmed-case.html) (accessed Oct. 14, 2014).

¹³ BBC, *Ebola contained in Nigeria, Senegal – US health officials* (Sept. 30, 2014) (online at www.bbc.com/news/world-africa-29436851).

¹⁴ *U.S. Troops Battling Ebola Get Off to Slow Start in Africa*, Wall Street Journal (Sept. 28, 2014) (online at online.wsj.com/articles/u-s-troops-battling-ebola-get-off-to-slow-start-in-africa-1411948064).

¹⁵ *Liberia Anxiously Awaits Aid from U.S., Others in Fight Against Ebola*, Los Angeles Times (Oct. 4, 2014) (online at www.latimes.com/world/africa/la-fg-ebola-us-liberia-20141004-story.html).

¹⁶ *Many Liberian Healthcare Workers Ignore Ebola Strike Call*, Reuters (Oct. 14, 2014) (online at in.reuters.com/article/2014/10/13/health-ebola-liberia-idINKCN0I221S20141013).

¹⁷ *Britain Sends 750 Military Personnel to Combat Ebola*, Yahoo News (Oct. 8, 2014) (online at news.yahoo.com/british-troops-train-ahead-ebola-mission-leone-182147147.html); *France Says Will Build More Ebola Treatment Centers in Guinea*, Reuters (Oct. 13, 2014) (online at www.reuters.com/article/2014/10/13/us-health-ebola-france-idUSKCN0I224W20141013).

While several medical labs have been built and training is underway, many of the ETUs will not be ready until November.¹⁸ Poor local infrastructure and red tape are exacerbating these problems. In one widely reported case, a shipping container filled with medical gear and mattresses has been held up at a port for more than a month.¹⁹

United Nations officials continue to raise dire warnings about the need for more resources and additional aid. Last week, U.N. Secretary General Ban Ki-Moon called for a 20-fold surge in international aid to fight the outbreak.²⁰

The impact of the Ebola crisis in these countries is magnified by the broader impact on the already weak public health systems as a whole. With hospitals overcome or closed by Ebola, and many health providers becoming ill during the epidemic, routine medical problems are becoming deadly for thousands of West Africans.²¹

V. EBOLA CASES IN THE UNITED STATES

To date, eight Ebola cases have been or are being treated in the United States. Six of the victims contracted the disease in West Africa. In August 2014, Dr. Kent Brantly and Nancy Writebol, volunteers with international aid organizations, were flown to Emory University Hospital and treated with the experimental drug ZMapp. Both survived and were released several weeks later. On September 5, 2014, Dr. Rick Sacra was flown to the Nebraska Medical Center, where he was treated with plasma from Dr. Brantley and another experimental drug, TKM-Ebola. He survived and was released earlier this month. A third unknown doctor arrived at Emory University Hospital on September 8 and is still being treated. And Ashoka Mukpo, a camera operator for NBC News, was flown to the Nebraska Medical Center on October 1 and remains under treatment.²²

¹⁸ *Where are Ebola Supplies? Aid Workers Say Help Isn't Fast Enough*, NBC News (Oct. 8, 2014) (online at www.nbcnews.com/storyline/ebola-virus-outbreak/where-are-ebola-supplies-aid-workers-say-help-isnt-fast-n220661).

¹⁹ *Id.*

²⁰ *Ebola Could Be World's Next AIDS, CDC Director Warns World Bank Summit*, Associated Press and ABC News (Oct. 9, 2014) (online at www.wjla.com/articles/2014/10/ebola-could-be-world-s-next-aids-cdc-director-warns-world-bank-summit-107936.html).

²¹ *Why America's Health Care System Can Stop Ebola, Even Though Other Countries Couldn't*, Vox (Oct. 1, 2014) (online at www.vox.com/2014/10/1/6875623/ebola-wont-spread-in-the-us-because-the-key-to-stopping-it-is-a).

²² *Who Are the American Ebola Patients?*, CNN (Oct. 6, 2014) (online at www.cnn.com/2014/10/06/health/american-ebola-patients/).

The sixth case was that of Thomas Eric Duncan, a Liberian citizen who traveled to the United States to visit family on September 20.²³ Mr. Duncan had assisted with transporting an Ebola victim in the days prior to leaving Liberia.²⁴ He was asymptomatic when he traveled, but appeared at Texas Presbyterian Hospital in Dallas on September 25 with a fever, abdominal pain, and dizziness and informed the hospital that he had recently been in Africa. He was then discharged from the hospital with a prescription for antibiotics and directions to take Tylenol.²⁵

Mr. Duncan became more ill after his discharge, and on September 28, a family member called 911 and Mr. Duncan was transported via ambulance to Texas Presbyterian. At that point, Mr. Duncan was placed in isolation and tested, and on September 30, CDC announced publicly that he had tested positive for Ebola.²⁶ Mr. Duncan received an experimental treatment for Ebola, but his condition continued to worsen and he passed away on October 8, 2014.

The CDC, Texas Department of State Health Services, and Dallas County Health and Human Services immediately began to track those individuals who had contact with Mr. Duncan after he became ill.²⁷ In the days immediately after the diagnosis, questions were raised about the fact that the family was allowed to stay in their apartment contaminated by Mr. Duncan's medical waste for several days, the uncertainty about who would decontaminate the apartment, and the need to develop emergency procedures to transport the medical waste.²⁸ To date, none of the individuals who had contact with Mr. Duncan before he was admitted to the hospital have become ill with Ebola.

However, on Sunday, October 12, the CDC announced that a nurse who had treated Mr. Duncan after his diagnosis had tested positive for Ebola.²⁹ Identified as Nina Pham, she is being treated at Texas Presbyterian. On Wednesday, October 15, the Texas Department of State

²³ *Is the U.S. Prepared for an Ebola Outbreak?*, New York Times (Oct. 10, 2014) (online at www.nytimes.com/interactive/2014/10/09/us/is-the-us-prepared-for-an-ebola-outbreak.html).

²⁴ *Id.*

²⁵ *Ebola Patient's Temperature Spiked to 103 Degrees*, Associated Press (Oct. 10, 2014) (online at bigstory.ap.org/article/d0776696ea1e4dfca19e1effc2638d57/ebola-patient-arrived-er-103-degree-fever).

²⁶ *Id.*

²⁷ Because Ebola is not transmissible while individuals are asymptomatic, the passengers who traveled with Mr. Duncan to the United States and others who had contact with him prior to the development of his symptoms were not at risk.

²⁸ *Ebola Patient's Temperature Spiked to 103 Degrees*, Associated Press (Oct. 10, 2014) (online at bigstory.ap.org/article/d0776696ea1e4dfca19e1effc2638d57/ebola-patient-arrived-er-103-degree-fever).

²⁹ Centers for Disease Control and Prevention, *Texas Reports Positive Test for Ebola in a Health Care Worker* (Oct. 12, 2014) (online at www.cdc.gov/media/releases/2014/s1012-texas-health-care-worker.html).

Health Services announced that a second health care worker at Texas Presbyterian who had cared for Mr. Duncan had tested positive for Ebola.

These cases raise a number of questions because the two workers contracted the virus while wearing protective gear and following or attempting to follow CDC guidelines. CDC and officials from Texas Presbyterian are attempting to determine how these infections occurred and CDC is reexamining its approach to infection control for health officials and will put in place highly trained “Ebola response teams” to any hospital in the U.S. with a confirmed Ebola case.³⁰

These cases also raise questions about preparedness at Texas Presbyterian and other hospitals. According to the *Washington Post*, Texas Presbyterian, while treating Mr. Duncan, “had to learn on the fly how to control the deadly virus, adding new layers of protective gear for workers in what became a losing battle to keep the contagion from spreading ... the revelations this week suggest that Texas Health Presbyterian Hospital was not fully prepared for the unfamiliar virus.”³¹

VI. ENTRY AND EXIT SCREENING FOR TRAVELERS FROM WEST AFRICA

On October 8, the Administration announced enhanced screening of incoming travelers from West Africa at five airports – New York-John F. Kennedy, Newark, Chicago-O’Hare, Washington-Dulles, and Atlanta – that account for 94% of incoming passenger traffic from West Africa. At those airports, customs officials will take additional steps to assess risk from traveling and monitor temperatures to identify any potential Ebola cases. Travelers with indications of fever or potential exposure will undergo additional procedures to ensure that they do not have Ebola and isolate them if they do.³² Screening began at JFK on October 10, and will begin at the other airports on October 16.

Administration officials have dismissed calls for travel bans from West Africa by noting that such bans are unnecessary (because screening is adequate to ensure that those who are ill do not fly) and because bans would interfere with the response in West Africa, making the outbreak worse and *increasing* risks that it would be imported into the U.S. and other countries.³³ Doctors Without Borders, the international non-government organization playing the most prominent role

³⁰ *Ebola Puts Nina Pham, a Nurse Unaccustomed to the Spotlight, in Its Glare*, New York Times (Oct. 13, 2014) (online at www.nytimes.com/2014/10/14/us/ebola-puts-nina-pham-a-dedicated-nurse-unaccustomed-to-the-spotlight-in-its-glare.html).

³¹ *Ebola Challenged Dallas Hospital*, Washington Post (Oct. 15, 2014).

³² Centers for Disease Control and Prevention, *Enhanced Ebola Screening To Start At Five U.S. Airports And New Tracking Program For All People Entering U.S. From Ebola-Affected Countries* (Oct. 8, 2014) (online at www.cdc.gov/media/releases/2014/p1008-ebola-screening.html).

³³ *CDC Chief: Why I Don’t Support a Travel Ban to Combat Ebola Outbreak*, Fox News (Oct. 9, 2014) (online at www.foxnews.com/opinion/2014/10/09/cdc-chief-why-dont-support-travel-ban-to-combat-ebola-outbreak/).

in fighting Ebola in Africa, agreed with this assessment. In interviews with Committee staff, its staff stated that a travel ban would have a “catastrophic” impact on efforts to fight the virus.³⁴

VII. EBOLA VACCINES, TREATMENT, AND RESPONSE

There is no private market for vaccines and treatments for infectious diseases and biological hazards like Ebola because the market for these treatments is small and sporadic and because affected countries cannot afford to pay high prices for these drugs. As a result, development of treatments and vaccines is entirely driven by government activity.

The DOD Defense Threat Reduction Agency (DTRA) and the National Institutes of Health’s National Institute of Allergy and Infectious Diseases (NIAID) both fund treatment and vaccines for biological threats. Additionally, the Biomedical Advanced Research and Development Authority (BARDA) was established in 2005 within the Department of Health and Human Services’ Office of the Assistant Secretary for Preparedness and Response (ASPR) to research and develop responses to bioterrorism and infectious diseases. BARDA funds development of drugs, assisting through the clinical trial phase and into drug production.³⁵

CDC works with ASPR to development federal response plans, guidance, and communications and to interact with state and local entities to deploy and distribute medical countermeasures. CDC also works with the Food and Drug Administration (FDA), in efforts to monitor safety and performance of deployed countermeasures.³⁶ The Public Health Emergency Medical Countermeasures Enterprise (PHEMCE), also part of ASPR, coordinates these various federal agencies on chemical, biological, radiological, and nuclear threats and infectious disease preparedness.³⁷

There are currently several Ebola therapies and two Ebola vaccines at various stages of development.³⁸ While several of the therapies have been used on patients in the United States via the emergency approval process, there is insufficient information to know what effect, if any,

³⁴ House Committee on Energy and Commerce, Interview of Doctors Without Borders staff (Oct. 9, 2014).

³⁵ Office of the Assistant Secretary for Preparedness and Response, *BARDA Unveils Path Forward in the BARDA Strategic Plan 2011-2016* (Aug. 19, 2013) (online at www.phe.gov/about/barda/Pages/2011barda-stratplan.aspx).

³⁶ Office of the Assistant Secretary of Preparedness and Response, *PHEMCE Mission Components* (June 20, 2012) (online at www.phe.gov/Preparedness/mcm/phemce/Pages/mission.aspx).

³⁷ Office of the Assistant Secretary of Preparedness and Response, *Public Health Emergency Medical Countermeasures Enterprise* (May 30, 2013) (online at www.phe.gov/Preparedness/mcm/phemce/Pages/default.aspx).

³⁸ Centers for Disease Control and Prevention, *Questions and Answers on Experimental Treatments and Vaccines for Ebola* (Aug. 29, 2014) (online at www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/qa-experimental-treatments.html).

they have had on the patients.³⁹ Even if a treatment or vaccine is shown to be safe and effective, it is unlikely that they could rapidly be produced in massive quantities, presenting government and the private sector with potentially complicated ethical decisions about how and where they should be used.⁴⁰

VIII. PUBLIC HEALTH FUNDING AND FUNDING FOR EBOLA RESPONSE

A. Funding for the Ebola Response in 2014

In September 2014, Congress passed a Continuing Appropriations Resolution (H.J. Res. 124) that provided \$88 million (the full amount requested by the Obama Administration) in additional funds to respond to the Ebola crisis in West Africa: \$58 million to accelerate countermeasure and product advanced research and development and \$30 million to support the CDC's response efforts in West Africa.⁴¹

The Department of Defense in September 2014 also requested that it be allowed to transfer \$1 billion between accounts to pay for the deployment of military resources in West Africa, a transfer that requires the consent of the Chair and Ranking Member of the House and Senate Appropriations and Armed Services Committees. On October 10, the Committees approved up to \$750 million in funding for Ebola response to move forward.⁴²

B. Long-Term Public Health Funding Concerns

The Ebola outbreak and the appearance of two cases of Ebola in the United States also raised concerns about long-term funding for public health preparedness in the United States. Multiple federal agencies and programs within HHS contribute to U.S. public health efforts related to infectious disease and preparedness, including CDC, NIH (especially NIAID), and ASPR.⁴³

Federal funding for public health efforts at these agencies increased significantly from 2001 through 2006, in large part because of increased funding for bioterrorism and pandemic

³⁹ *FDA Approves Use of Experimental Ebola Drug*, The Hill (Oct. 6, 2014) (online at thehill.com/policy/healthcare/219856-fda-approves-use-of-experimental-ebola-drug).

⁴⁰ *War on Ebola: Vaccines and Treatments in the Works*, CNBC (Oct. 8, 2014) (online at www.cnbc.com/id/102068233#).

⁴¹ Office of Management and Budget, *OMB Director Shaun Donovan on the Passage of HJ Res 124, Continuing Resolution, 2015* (Sept. 18, 2014) (online at www.whitehouse.gov/blog/2014/09/18/omb-director-shaun-donovan-passage-hj-res-124-continuing-resolution-2015).

⁴² *\$750 Million in Ebola Funding Approved*, Politico (Oct. 10, 2014) (online at www.politico.com//story/2014/10/us-ebola-funding-111774.html).

⁴³ Congressional Research Service, *Public Health Service Agencies: Overview and Funding* (Oct. 8, 2014) (R43304).

flu.⁴⁴ Since 2006, federal funding for public health efforts has been mixed, some federal public health programs have faced budget cuts while other programs have seen their budgets increase.

NIH's budget has been stagnant over the past decade (with the exception of stimulus funding in 2009 and 2010).⁴⁵ Accounting for inflation, NIH's purchasing power has dropped by more than 20%.⁴⁶ NIH funding to support of Ebola research and development of vaccines, therapeutics, and diagnostics peaked in 2006 at \$59 million but by 2013 fell to \$42.5 million.⁴⁷

Similarly, CDC's overall purchasing power declined by 12% since 2006.⁴⁸ About 75% of CDC's budget is distributed to state and local partners, which serve as the front lines on many public health concerns.⁴⁹ Through the Public Health Emergency Preparedness (PHEP) cooperative agreement, PHPR supports state local health departments' preparedness activities to build and strengthen their abilities to respond effectively to public health emergencies.⁵⁰ Funding for the PHEP cooperative agreement has been cut from \$1 billion in 2002 (the first year of PHEP funding) to \$612 million in 2014.⁵¹

HHS's Hospital Preparedness Program, managed by ASPR, has been cut from \$417 million in 2010 to \$255 million in 2014, a 44% decrease when adjusted for inflation.⁵² In

⁴⁴ R. William Johnstone, *Bioterror: Anthrax, Influenza, and the Future of Public Health Security*, 124-125 (2008).

⁴⁵ Congressional Research Service, *A History of NIH Funding* (Mar. 7, 2014) (R43341).

⁴⁶ *Id.*

⁴⁷ E-mail from National Institutes of Health Office of Legislative Affairs to Congressional Research Service Staff (Sept. 12, 2014).

⁴⁸ Department of Health and Human Services, Fiscal Year 2008 Justification of Estimates for Appropriation Committees (online at www.cdc.gov/fmo/topic/Budget%20Information/appropriations_budget_form_pdf/FY08_CDC_CJ_Final.pdf) (accessed Oct. 15, 2014); Centers for Disease Control and Prevention, *FY 2014 Operating Plan Table* (online at www.cdc.gov/fmo/topic/Budget%20Information/appropriations_budget_form_pdf/FY2014_CD_C_Operating_Plan.pdf) (accessed Oct. 14, 2014). Calculated for inflation using the Bureau of Labor Statistics CPI Inflation Calculator.

⁴⁹ Trust for America's Health and Robert Wood Johnson Foundation, *Investing in America's Health: A State-by-State Look at Public Health Funding and Key Health Facts*, at 7 (May 2014).

⁵⁰ Centers for Disease Control and Prevention, *Division of State and Local Readiness* (May 2014) (online at www.cdc.gov/phpr/documents/DSLRL_fact_sheet.pdf).

⁵¹ *Id.*

⁵² Department of Health and Human Services, *FY 2012 Budget in Brief* (2011); Department of Health and Human Services, *FY 2015 Budget in Brief* (2014). Calculated for inflation using the Bureau of Labor Statistics CPI Inflation Calculator.

contrast, funding for BARDA has increased in actual dollars from \$320 million in 2010 to \$415 million in 2014, an increase of 19% when adjusted for inflation.⁵³

XI. WITNESSES

The following witnesses have been invited to testify:

Thomas R. Frieden, M.D., M.P.H.

Director
Centers for Disease Control and Prevention

Anthony S. Fauci, M.D.

Director
National Institute of Allergy and Infectious Diseases
National Institutes of Health

Luciana Borio, M.D.

Assistant Commissioner for Counterterrorism Policy
U.S. Food and Drug Administration

Robin Robinson, Ph.D.

Director
Biomedical Advanced Research and Development Authority
Office of the Assistant Secretary for Preparedness and Response
U.S. Department of Health and Human Services

John P. Wagner

Acting Assistant Commissioner
Office of Field Operations
U.S. Customs and Border Protection
Department of Homeland Security

Daniel Varga, M.D.

Chief Clinical Officer and Senior Vice President
Texas Health Resources

⁵³ *Id.*