

Thank You, Mr. Thomas Eric Duncan

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Grossman L. Thank you, Mr. Thomas Eric Duncan. *Harvard Public Health Review*. Fall 2018;14.

I write to extend my gratitude to Mr. Thomas E. Duncan for having personally transported the Ebola virus to the United States. In his home country of Liberia, the medical and public health infrastructure in 2014 was not equipped to contain this high-risk virus. In transporting the Ebola virus to the United States, Mr. Duncan unknowingly delivered this deadly germ to a country that has the medical, scientific, infection control, public health, and financial resources to discover how this germ is transmitted, how it is spread, develop new vaccine strategies for prevention and treatment, all ultimately leading to the possibility of worldwide eradication. When Mr. Duncan's illness was diagnosed in Texas in 2014, and some of his caretakers became infected, the fear-based public outcry and the lack of knowledge about this virus provided the impetus to contain the few cases that occurred in the United States, but more importantly, to activate impressive research programs that describe how this virus is spread, how it is best contained, and begin to develop the prevention and treatment strategies that are required to contain this virus. In doing so, we have finally done the work for the resource-poor countries that are truly affected with large numbers of patients.

Ebola has been a known and deadly disease for 42 years, with the original epidemic occurring in the Democratic Republic of the Congo in 1976. We have watched from afar as this deadly infection was known for its short incubation period and a very high mortality rate. The epidemics have reported fairly small numbers (1 to 425) of cases in sporadic and short-lived epidemics in the Democratic Republic of the Congo, Sudan, Gabon, Cote d'Ivoire, South Africa, Uganda, Liberia, Sierra Leone, and Guinea between 1976 and 2014. Unfortunately, in 2014, the Ebola virus strain had changed and the disease associated had a much longer incubation period. Thus, the 2014 epidemic in Sierra Leone, Guinea, and Liberia was very difficult to contain because the long incubation period allowed for a seemingly healthy host who is actively spreading the virus to have many more contacts and potentially travel long distances allowing for a wide geographic spread. With this smoldering and progressive distribution, the likelihood of widespread disease and endemic persistence in settings without developed infection control infrastructure becomes a reality.

It became clear at the time of the 2014 outbreak that no one had the answers about the most infectious period, the multiple ways that the Ebola virus could be spread, what the

best infection control methods were for preventing such spread, and what the efficacy was of vaccines and therapies. This all felt very similar to what we endured when the Acquired Human Immunodeficiency Virus (AIDS) epidemic emerged in the early 1980s. The lack of knowledge in any high-risk infectious disease setting is frightening, but the admission of our ignorance provides an exciting platform for collecting the needed facts and utilizing this scientific base to guide us in the best infection control and clinical care practices.

In the 2014 Ebola epidemic, the United States with its impressive clinical care, virology research, infection control, public health, and environmental sanitation capabilities made it unlikely that we would see mass disease, even with a few cases arriving on our shores. What the few cases in the United States did, however, is provide us with the models to not only further protect ourselves from epidemic and endemic disease, but so much more importantly, provide limited resource settings in Africa with the best medical treatments, research opportunities, environmental sanitation standards, and public health practices. These practices, in the countries where the disease incidence is of immense proportions, became the required standards to best protect themselves, treat their patients, prevent future cases, and hopefully halt the epidemic disease.

In the intervening four years since Mr. Duncan arrived in Texas, became ill, was hospitalized, infected a few of his nurses, and subsequently succumbed to overwhelming infection, we have seen a handful of other infected patients enter the United States with no further spread. A new investigative vaccine is on the horizon, novel therapies are

emerging, and infection control and public health strategies have been developed. Given that 42 years elapsed of known Ebola disease in resource-poor countries without much in the way of scientific discovery for containment and treatment, it is sad that it took this deadly virus being transported to the United States in one sick Liberian citizen for the United States and other developed countries to make Ebola research a priority.

Mr. Duncan, we owe you our gratitude, and to your family, our sincere condolences.

About the Author

Dr. Grossman is the Medical Alumni Professor of Pediatric Infectious Disease and the Associate Dean for International Programs at the University of Virginia School of Medicine.