

New study sheds light on how some survive Ebola

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A first-of-its-kind Ebola study yields clues to how some people are able to survive the deadly virus and suggests possible avenues for treatments that could save more lives.

Researchers at Centers for Disease Control and Prevention, Emory University School of Medicine, and University of Nebraska Medical Center analyzed the immune responses of Ebola patients treated in the United States.

Their study was recently published online in the *Clinical Infectious Disease Journal* in the article entitled, "Kinetic Analysis of Biomarkers in a Cohort of U.S. Patients with Ebola Virus Disease."

"These findings are encouraging and underscore how crucial it is to continue the fight against Ebola," said CDC Director Tom Frieden, MD, MPH. "We must come up with new ways to keep people safe and combat diseases that threaten our health."

Ebola [virus](#) causes a severe and often fatal infection that can include fever, diarrhea and unexplained bleeding. Despite the fact that more than 30,000 individuals have acquired EVD since it was discovered in 1976, the medical and scientific community still does not have a clear understanding of the mechanisms by which Ebola causes such severe illness.

This is the first time researchers have been able to study Ebola virus

disease (EVD) using samples taken from patients during both their illness and recovery. In the seven U.S. patients, researchers tracked 54 different markers of immune-system activity from hospital admission until the day of discharge. Among the seven patients, five had moderate EVD and two had severe EVD requiring mechanical ventilation and dialysis.

"We were able to identify the particular components of patients' immune systems that successfully fought off the virus," said lead author Anita McElroy, MD, PhD, who is a guest researcher in CDC's Viral Special Pathogens Branch and a physician and faculty member in the Department of Pediatrics (Infectious Diseases) in Emory School of Medicine. "These are the parts of the immune system that we need to tap into to develop new therapies."

The results show patients with severe EVD had high levels of virus in their blood and out-of-control immune responses leading to destruction of healthy tissues, multisystem organ failure, shock, and, in most cases, death. In contrast, patients with moderate EVD had strong, healthy immune responses that were able to control the virus. All of the [patients](#) with moderate illness and one patient with severe illness survived.

It is unclear why exactly some people's immune systems respond more effectively to viruses. Possible contributing factors include genetics and whether or not a person has other illnesses or conditions. Identifying which parts of the immune system malfunction in severe EVD cases as well as the parts that function well in the moderate cases could lead to the design of therapies that might theoretically inhibit the disease's progression.

More information: James M. Hughes et al. Kinetic Analysis of Biomarkers in a Cohort of US Patients With Ebola Virus Disease, *Clinical Infectious Diseases* (2016). [DOI: 10.1093/cid/ciw334](https://doi.org/10.1093/cid/ciw334)

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