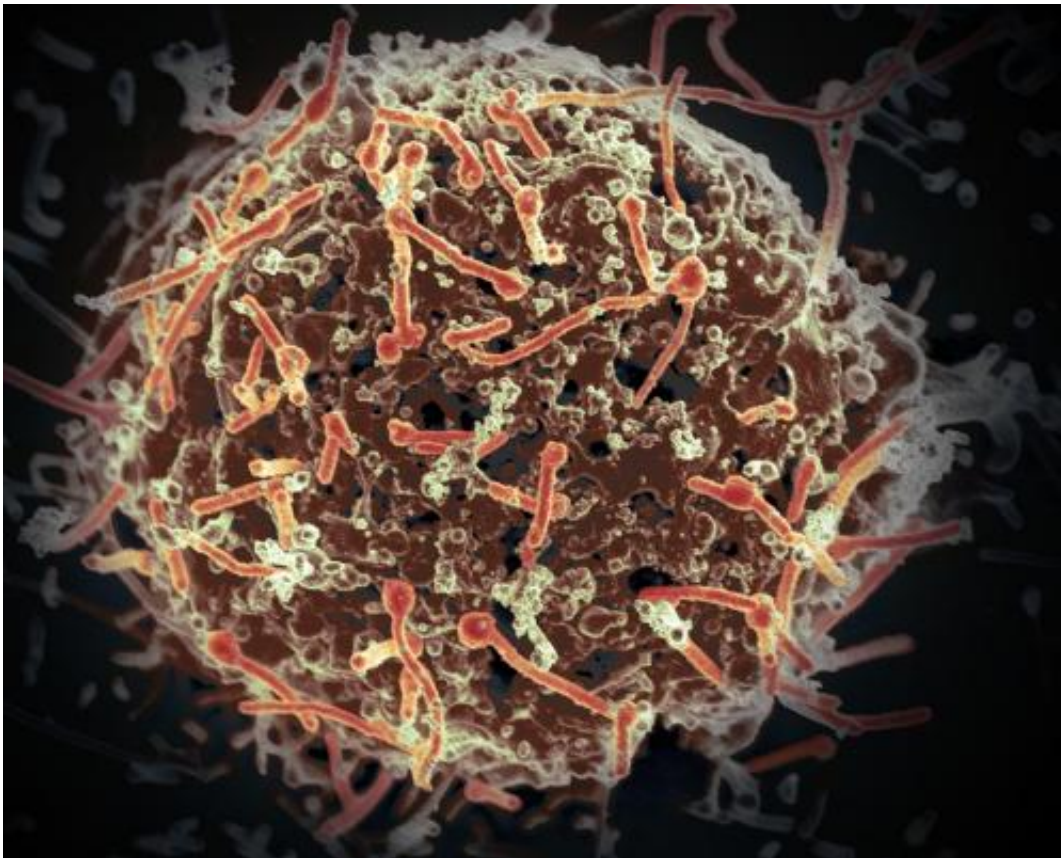


# Blood levels of Ebola virus are predictive of death

December 1 2015

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The Ebola virus, isolated in November 2014 from patient blood samples obtained in Mali. The virus was isolated on Vero cells in a BSL-4 suite at Rocky Mountain Laboratories. Credit: NIAID

The levels of virus in the blood (viremia) for patients with Ebola virus disease (EVD) are strong predictors of fatality, according to a study

published in *PLOS Medicine* this week. The study, conducted by the teams of Amadou Alpha Sall (Institut Pasteur, Dakar, Senegal) and of Simon Cauchemez (Institut Pasteur, Paris, France) and scientists from Guinea and Canada, found that in the week following symptom onset, viremia remained stable, and that the case fatality ratio (CFR, the proportion of deaths from the disease to total cases) increased with level of viremia.

The researchers used laboratory, clinical, and [demographic data](#) for 699 patients with confirmed EVD hospitalized in the Conarky area of Guinea between March 2014 and February 2015 to model the association between viremia and CFR. They found the CFR for patients with low, intermediate, and high viremia was 21%, 53%, and 81%, respectively. Compared to adults 15-44, children under 5 years old and adults 45 and over had higher CFR, but children 5-14 had a lower CFR. They also noted that when the average viremia increased tenfold in July 2014, CFR increased as well, by 14%. The authors caution that these findings may not translate to cases outside the hospital setting.

By knowing the relationship between viremia and CFR, researchers will be able to more accurately assess the efficacy of treatments for EVD in nonrandomized trials, and by stratifying participants by viremia group Cauchemez and colleagues estimate researchers will be able to reduce the sample size needed for randomized trials by 25%.

The authors say: "This finding suggests that heterogeneity in historical CFR estimates among patients, ETCs, and over time may at least partly be explained by variations in viremia and underscores that more valid estimates of the influence of other factors, including treatment effects, might be obtained by adjusting for differing levels of viremia among patients."

**More information:** Faye O, Andronico A, Faye O, Salje H, Boëlle P-

Y, Magassouba N, et al. (2015) Use of Viremia to Evaluate the Baseline Case Fatality Ratio of Ebola Virus Disease and Inform Treatment Studies: A Retrospective Cohort Study. *PLoS Med* 12(12): e1001908. DOI: [10.1371/journal.pmed.1001908](https://doi.org/10.1371/journal.pmed.1001908)

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