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Australian researcher helps with Ebola vaccine trials

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An Australian researcher has helped identify the kind of human trial that is most effective for testing Ebola vaccines.

Associate Professor Manoj Gambhir, from Monash University's Department of Epidemiology and Preventive Medicine, is part of the team working on the research. Led by University of Texas Austin researcher Dr Steve Bellan, and in collaboration with the U.S. Centers for Disease Control and Prevention (CDC), the study on the design of CDC's vaccine trial in Sierra Leone is published in *The Lancet Infectious Diseases*.

Safe and effective vaccines could help end the ongoing Ebola virus disease epidemic in parts of West Africa and stop future outbreaks of the virus.

The research team has been looking at the best way to undertake trials for testing Ebola vaccines in Sierra Leone. The CDC recently announced the vaccine trial in the country, to complement trials in Guinea and Liberia.

Dr Gambhir said the team looked at whether a randomized control trial (RCT) – where all people in the population have the same chance of being selected; or a stepped-wedge cluster trial design—which would give vaccine to healthcare workers and eventually treat all of them—is most safe and effective in evaluating a vaccine.

"We projected district-level Ebola virus disease rates for the next six months in Sierra Leone and then simulated both designs to see which was more effective."

Dr Gambhir said the team found the best way of detecting an effective and safe vaccine was to use a modified, randomized control trial.

"This is because it has a greater and quicker ability to detect whether the vaccine is protects or not. In other words it has what statisticians call a greater 'power' to measure effectiveness," he said.

"Also, RCTs are less likely to be biased when an epidemic is as complex as the current Ebola outbreak."

Dr Gambhir said Ebola has claimed the lives of more than 10,000 people, and whilst the epidemic was now receding, the search for a safe and effective vaccine remains crucial.

The study is the culmination of a rapid collaboration between academic researchers at several universities—including Monash in Australia as well as many institutions in the U.S. and Canada—and a major public health agency, the CDC, in the face of a truly international public health emergency.

The speed with which the work was done is particularly important given that its publication coincides with the beginning of the CDC vaccine trial in Sierra Leone.

"We're proud we could work so closely with the CDC on this study and we hope to be a resource to the agency during and after the trial," said Dr Gambhir.

More information: "Statistical power and validity of Ebola vaccine

trials in Sierra Leone: a simulation study of trial design and analysis." *The Lancet Infectious Diseases*, Volume 15 , Issue 6 , 703 - 710 DOI: dx.doi.org/10.1016/S1473-3099(15)70139-8