

# Sierra Leone Ebola lockdown was too short: Swiss research

October 9 2014, by Nina Larson

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Three-day quarantines are not enough to net all Ebola cases in a given area, Swiss scientists said this week after using genetic sequencing to map the early spread of the virus in Sierra Leone.

One of the three west African countries hardest hit by the raging epidemic that has killed nearly 3,900 people, Sierra Leone launched a nationwide three-day shutdown last month in a bid to find unreported cases.

But a team of scientists at the Swiss Federal Institute of Technology in Zurich (ETHZ) determined through sequencing of early cases in the country that the average incubation period of the virus is around five days.

This means Sierra Leone, which turned up hundreds of new cases under the shutdown, could have discovered many more if it had extended the quarantine by a few more days.

"You might happily stay home for three days but then on day four the disease breaks out when you actually leave the house again, and then you would transmit," research team head Tanja Stadler told AFP.

While the average incubation period for Ebola is five days, a person can carry the virus without showing symptoms or being contagious for anywhere from two to 23 days, she pointed out.

It remains unclear if nationwide shutdowns are effective at all. But if countries do opt for that route they should take guidance from the average incubation period, Stadler said.

## **How many missing links?**

Her team, which works out of an ETHZ lab in the Swiss city of Basel, genetically sequenced 72 people infected with Ebola in Sierra Leone in May and June to build a virus family tree in a bid to reveal more about its transmission path.

Since Ebola mutates slightly each time it is transmitted to a new person, the scientists looked at how similar the virus was in different patients to evaluate how many missing links, or unreported cases, there were in their reconstituted transmission chain.

Their findings, published in the scientific journal PLOS earlier this week, show that each infected person on average transmitted Ebola to 2.18 others and that around 30 percent of cases had gone undetected.

Devastatingly, the data clearly show that Ebola spread constantly through June, meaning that "whatever public health interventions were performed in Sierra Leone at that time did not help," Stadler said.

The data also showed the mean infectious period for the virus was from 1.2 to seven days, although some remain infectious for far longer.

The World Health Organization said earlier this week that Ebola had been shown, albeit rarely, to survive in semen for up to 90 days.

People who survive Ebola should be advised to use a condom for at least 100 days "to be on the super safe side," Stadler said.

Sierra Leone in June counted only a few hundred infections and around 50 deaths, and it remains unclear if the findings can help inform the country's response today, as infections soar towards 2,800, with nearly 900 people already dead.

"Unfortunately, we don't have data from after the shutdown, because the method we developed would allow us to quantify if during (or following) the shutdown the transmission actually decreased," Stadler said.

Accessing Ebola data is complicated, since only a few dozen labs around the world have the security clearance to work with the deadly pathogen, and because it is dangerous for people on the ground to handle and send out the blood samples.

At least five of the doctors and nurses who helped gather the samples the Swiss study is based on have since died of Ebola, Stadler pointed out.

"Hopefully people now know they should forward us new data if they get it," she said.

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