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## Is there a time and place for ring vaccination for oral cholera vaccine?

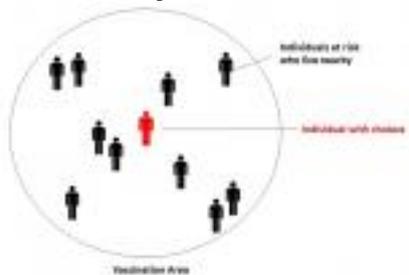


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[Anne Ballard, MPH](#) [1]

Program Officer | Johns Hopkins Center for Communication Programs

**Is there a time and place for ring vaccination for oral cholera vaccine? A new research publication [2] by lead author Mohammed Ali sheds light on this question.**



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Cholera poses a global threat with approximately 2.5 million cases each year, 100,000 of which result in death. Given that cholera is easily spread in highly populated communities where access to safe water and sanitation are lacking and where hygiene is often compromised, people are at a high risk of contracting cholera if they live near someone who is currently infected.

### Ring Vaccination

If this could be successfully employed, a ring vaccination provides a potential strategy to protect persons who live near the case and it may also limit spread of the bacteria. This strategy would need to rapidly identify cases and quickly vaccinate individuals who live in the same geographic area as a cholera patient. The grouping of individuals by geographic distance is referred to as a ring or cluster. The feasibility as well as the effectiveness of vaccinating a group of people in the ring for controlling the spread of cholera is not known; however, if this was feasible, it might be a reasonable strategy in certain situations. For example, it could be one of the tools used by rapid response teams when they attempt to control cholera outbreaks. Ring vaccination may especially be considered when there is vaccine shortage and difficult decisions must be made to target the vaccine to groups at highest risk. When measured in terms of cost per case averted, this may be a more cost effective strategy. Since nearby neighbors are at higher risk; vaccinating them would prevent more cases with a smaller number of doses than a campaign that vaccinated a general population.

### Findings from India

A recent publication in PLOS Medicine, [Potential for Controlling Cholera Using a Ring Vaccination Strategy: Re-analysis of Data from a Cluster-Randomized Clinical Trial](#) [2], shows promise for ring vaccination with oral cholera vaccine (OCV). Researchers from the DOVE Project at Johns Hopkins

Bloomberg School of Public Health, International Vaccine Institute, and the National Institute for Cholera and Enteric Diseases analyzed existing data collected from a cluster randomized control trial including approximately 72,000 individuals living in Kolkata, India in 2006. Individuals in the trial received either oral cholera vaccine or placebo.

During the 5-year study period each cholera case detected (a total of 672) was age matched with a control (an individual without cholera) from the same study population. Researchers initially identified the spatiotemporal dimension of the risk in order to define the ring size and the period of risk. They found that cholera risk was persistently higher for nearly a month among individuals living within 25 to 50 meters of the person with cholera as compared to those who lived near a control.

They then assessed the oral cholera vaccine effectiveness by comparing the rates of cholera among individuals who were living in an area where a high proportion of individuals had been vaccinated versus clusters where a low proportion of individuals had been vaccinated. When comparing these clusters, the vaccine was found to have an effectiveness greater than 90% for at least two years. This study shows that when most persons living around a case are vaccinated, the vaccine provides very high level protection to these people, including children, even if some of them have not been vaccinated.

### **Implications**

The protection provided by the vaccine when most people in the ring were vaccinated suggests that the ring vaccination could minimize the risk of cholera spreading to those who live near them. While the study is able to estimate the benefit of a ring vaccination strategy, this was not an actual trial to evaluate the effectiveness of such a strategy. Rather, it used data from a well-designed and well-documented trial in which vaccine was given at one time in Kolkata. If such a strategy was to be attempted, it would be necessary to identify cases very quickly, probably with the use of rapid tests, and to vaccinate the ring within a day or two. This would be very difficult during cholera outbreaks, and even if feasible, the vaccine takes several days to stimulate an immune response, so it would not prevent cases occurring during the first week. A ring vaccination strategy would certainly need to be combined with other cholera interventions to prevent these early cases. While promising, more research is needed to assess the feasibility and effectiveness of ring vaccination during outbreaks.

### **Source URL:**

<https://stopcholera.org/blog/there-time-and-place-ring-vaccination-oral-cholera-vaccine>

### **Links**

[1] <https://stopcholera.org/blog/authors/anne-ballard-mph>

[2] <http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002120>

[3] [https://stopcholera.org/sites/default/files/styles/content-zoom/public/anne\\_blog\\_pic\\_0.jpg?itok=P86yI9j3](https://stopcholera.org/sites/default/files/styles/content-zoom/public/anne_blog_pic_0.jpg?itok=P86yI9j3)