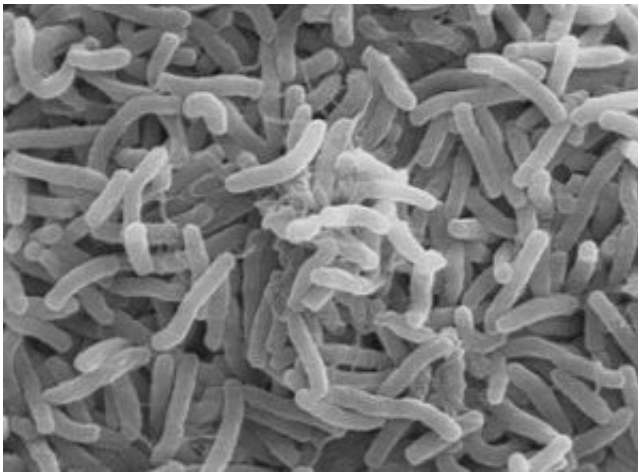


# Cholera vaccine study in Haiti suggests problems with current booster regimen

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Cholera bacteria. Credit: Public Domain

Cholera outbreaks are on the rise. To prevent and control them, three oral cholera vaccines are currently approved by WHO. A study published in *PLOS NTDs* examining the immune response to one of them in Haitian adults finds that while the first vaccine round elicits a strong cholera-specific response in the mucosa (the first point of contact with the cholera pathogen), the booster dose after 2 weeks does not appear to stimulate the immune system further.

After initial approval of a new [vaccine](#), research often continues and involves the testing in different populations and of different dosing regimens. Jason Harris, from Massachusetts General Hospital in Boston,

USA, and colleagues are studying a bivalent whole cell oral (BivWC) [cholera](#) vaccine produced in India that received pre-approval by WHO in 2011. The vaccine is increasingly being used in endemic settings to prevent outbreaks, and also is part of a WHO cholera vaccine stockpile for use in a rapid response to a new outbreak.

In this study, the researchers examined how strong an [immune](#) response the vaccine provokes in adults in Haiti. (Haiti had not experienced a recent cholera outbreak prior to 2010 when UN personnel accidentally introduced the pathogen following a devastating earthquake.) Cholera is now endemic in Haiti, and many people have had exposure to [cholera bacteria](#) and may have some pre-existing level of immunity.

The first level of contact with live cholera bacteria—or their dead counterparts contained in oral cholera vaccines—occurs in the mucosa of the gut. This triggers the development of cholera-specific antibody secreting cells (ASCs) which transiently migrate out of the gut and into the blood circulation. Because detection of ASCs in the blood provides an early correlate of subsequent immune memory in the gut mucosa, the researchers focused on these responses at multiple time points following BivWC vaccination in 24 healthy Haitian adults.

Participants received oral BivWC vaccine on days 0 and 14 (following the recommended regimen of two doses 14 days apart), and the researchers drew blood at day 0, and at 7 days following each vaccine dose (days 7 and 21). BivWC, they found, induced development of robust immune responses following the first dose of vaccine. The magnitude of these responses did not appear to be associated with recent exposure to cholera. In contrast, similar ASC responses were not detected following the second dose of vaccination.

Their results, the researchers say, suggest "that the currently recommended 14-day interval between doses may not be optimal for

boosting mucosal immune responses among adults in cholera endemic regions". Given similar results from studies of a different oral cholera vaccine in Asia, the researchers argue that "additional evaluation of the optimal dosing schedule for oral cholera vaccines with the goal of improving long-term immunity is warranted".

**More information:** *PLOS Neglected Tropical Diseases*, [DOI: 10.1371/journal.pntd.0004753](https://doi.org/10.1371/journal.pntd.0004753)

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