

Cholera and vaccine experts urge United States to stockpile vaccine

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As the cholera epidemic in Haiti continues to rage, public health workers are focusing their efforts on treating the tens of thousands who have already been hospitalized with cholera-like symptoms and providing clean water and adequate sanitation to control the disease's spread.

Could the [United States](#) be doing more to help the situation? In an editorial published in the November 24, 2010, issue of the [New England Journal of Medicine](#), vaccine and infectious disease specialists Matthew Waldor of the Howard Hughes Medical Institute, Peter Hotez of George Washington University and the Sabin Vaccine Institute, and John Clemens of the International Vaccine Institute in Korea note that safe and reasonably effective vaccines are available that could complement these efforts. These vaccines are in short supply, however, and the scientists state that the United States should stockpile [cholera](#) vaccines for rapid deployment to parts of the world that become at high-risk for the disease.

"The resistance to vaccination is truly baffling," says Waldor, a microbiologist and infectious disease specialist whose laboratory at Brigham and Women's Hospital studies cholera and other [pathogenic bacteria](#) that infect the gut. "The point of view [regarding controlling cholera in Haiti] has been that effort should be made toward establishing field hospitals to provide life-saving rehydration therapy. I totally understand that. However, I think it's a false dichotomy to say we can only do one or the other."

The [World Health Organization](#) estimates that three to five million people develop cholera each year. Untreated, the disease, which causes severe diarrhea and extreme dehydration, can kill within hours. It is most prevalent in areas where basic infrastructure, clean water, and sanitation are not available. Although the disease is usually treatable by replacing lost fluids, such interventions can be difficult to administer in regions that lack adequate medical facilities, and the opportunity for intervention is brief, Waldor and his colleagues point out in their editorial.

Three different oral vaccines are commonly used to prevent cholera in parts of the world where the disease is endemic: Dukoral, manufactured by Crucell; Shanchol, made by Shantha Biotechnics; and mORC-VAX from VaBiotech. All are relatively inexpensive, easy to administer, and reduce the risk of infection by more than eighty percent for at least six months. In adults, maximum immunity is achieved after two doses of vaccine; children usually receive three doses.

Dukoral is on the World Health Organization's list of prequalified medicines, which international agencies use to ensure quality, safety, and efficacy of the drugs they purchase for use in resource-limited areas; Shanchol is awaiting WHO prequalification. "Remarkably," the authors note in their editorial, "there are fewer than 400,000 total doses of oral cholera vaccines (either Dukoral or Shanchol) available at present for shipment from their manufacturers, making it impossible to consider large-scale vaccination of at-risk populations with the recommended two- or three-dose regimens of either product." In light of this global shortage of the vaccine, the authors urge the United States to establish its own stockpile of cholera vaccine that could be deployed to areas at high risk for major outbreaks.

The risk for a cholera outbreak can rise rapidly in the wake of a man-made or natural disaster, when populations can be forced into overcrowded camps with poor sanitation – such as the 1.3 million people

living in Haitian refugee camps as the country recovers from its January, 2010 earthquake. Flood-ravaged areas of Pakistan and the slums of Santo Domingo in Haiti's neighbor, the Dominican Republic, are similarly at risk, Waldor and his colleagues say. A ready supply of vaccine could limit the impact of an outbreak dramatically, they assert.

Further, the scientists argue, the benefits of a vaccine would exceed its direct impact on public health. Disease outbreaks can impede recovery efforts to continue following natural or man-made disasters. Cholera outbreaks also destabilize poor communities, promoting poverty and potentially igniting or exacerbating conflict, they say.

The costs of maintaining a stockpile of several million doses of cholera [vaccine](#) in the United States would be low but the humanitarian and diplomatic benefits would be enormous, the authors conclude.

Provided by Howard Hughes Medical Institute

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