

Haiti can quell cholera without vaccinating most people, researchers estimate

January 10 2013, by Chris Moran

Cholera could be contained in Haiti by vaccinating less than half the population, University of Florida researchers suggest in a paper to be published Thursday in the journal *Scientific Reports*.

The work places UF's Emerging Pathogens Institute in the pro-vaccination camp in an ongoing international debate over how best to contain the two-year-old epidemic that has claimed thousands of lives.

The [Centers for Disease Control and Prevention](#) has been skeptical about the effectiveness of vaccination against cholera in this setting. It has instead emphasized cleaning up the water supply and improving sanitation as the best ways to check the spread of the disease.

EPI's Zindoga Mukandavire and J. Glenn Morris Jr., in collaboration with David Smith of the Johns Hopkins Bloomberg School of Public Health, conclude that vaccinating 46 percent of Haitians could arrest the spread of cholera. They also noted the importance of using mathematical models to target immunization campaigns, so as to gain optimal results from the effort involved in vaccination in resource-poor settings.

"You don't have to immunize everybody. Even if we could get an immunization rate in the range of 40 to 50 percent, it should be possible to control recurrent cholera outbreaks," Morris said. "That should be enough to tilt things in your favor so that you can start getting control of the disease in these areas, to where, hopefully, rates of transmission will slow and numbers of cases will gradually die off."

Morris, director of the EPI, points to the "herd immunity" concept – which proposes that immunizing a significant portion of a population breaks a chain of infection—in support of the efficacy of less than universal vaccination.

Hundreds of thousands of Haitians have been infected since a catastrophic magnitude-7.0 earthquake occurred near Port-au-Prince three years ago.

The newly published work by Mukandavire and Morris is the latest contribution in what has been more than two years of efforts by the University of Florida to combat cholera in Haiti. At the beginning of the epidemic the university sent thousands of oral rehydration packets to Haiti, as a gift from the students at the College of Pharmacy. UF researchers also have honed a molecular fingerprinting technique that helps scientists determine whether the disease is spreading from the contamination of food and water or being transmitted from person to person. UF now has a permanent research laboratory in Haiti, providing ongoing monitoring of the epidemic.

Cholera is an infection of the small intestine that causes dehydration, abdominal cramps and diarrhea. It can be fatal if untreated. It is most commonly spread through contaminated drinking water.

There also has been a dispute over the source of the cholera outbreak in Haiti after a century-long absence of the disease in the country. UF researchers do not point fingers at what triggered the outbreak. They are intent on checking its spread. The latest EPI work relies on a [mathematical model](#) that advances previous analyses by refining the way environmental sources of the bacterium that causes [cholera](#) are factored into calculations.

Provided by University of Florida

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