Source of Haiti cholera bug goes under microscope

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In this picture taken June 22, 2012, a woman suffering from cholera symptoms receives serum at a hospital run by the relief organization Doctors Without Borders (MSF) in Port-au-Prince, Haiti. The death rate from the Haiti cholera epidemic that has killed more than 7,000 people over the past two years has finally ebbed, but the debate about the source of the disease has only grown more heated. A study led by a University of Maryland cholera expert renowned in the scientific community, found that Haiti had not just one cholera strain but a second one that may have been lurking undetected prior to the arrival of a United Nations peacekeeping battalion from Nepal. (AP Photo/Dieu Nalio Chery)

(AP) — The death rate from the Haiti cholera epidemic that has killed more than 7,000 people over the past two years has finally ebbed, but the debate about the source of the disease has only grown more heated.

That renewed controversy came into sharp focus following the recent

release of a study led by a University of Maryland cholera expert renowned in the scientific community.

Challenging prevailing wisdom, the study found that Haiti had not just one cholera strain but a second one that may have been lurking undetected prior to the arrival of a United Nations peacekeeping battalion from Nepal. Many finger the battalion as the chief culprit for a disease that has sickened more than half a million people. The study fell short of explicitly blaming the epidemic on the newly discovered strain but said it was a factor.

It was enough to reignite discussion about the disease and heighten political tensions between two camps who have argued over whether it was humans or the environment that could've introduced cholera to Haiti.

"Those are the two groups duking it out," said Judith Johnson, a professor of pathology and clinical microbiology at the University of Florida. Johnson described the episode as a "clash of the titans."

Report author Rita Colwell, a former director of the U.S. National Science Foundation, said she wasn't taking sides in the debate: "I'm not attacking anyone; I'm a scientist."

Regardless, her paper, published in the respected journal Proceedings of the National Academy of Sciences, challenged the view that the U.N. was responsible for the deadly disease. Instead, it argued, a "definitive statement of source attribution cannot yet be made" as it called for the creation of a public database to study cholera strains.

The report added that a "perfect storm" of environmental circumstances in 2010 enabled the bacteria to surface, as the impoverished country was hit by a massive earthquake, a hurricane and a "very hot summer

season."

Only a few months after a massive earthquake hit the country, cholera had popped out of seemingly nowhere even though there had been no previously documented cases of cholera, according to researchers at Duke University.

Following the outbreak in Haiti's biggest river, the Artibonite, the disease raged through the country's waterways and appeared in all 10 administrative departments a month later.

It seemed inevitable that the disease would circulate so easily. Cholera, whose symptoms consist of rapid dehydration and vomiting, is spread through water or food contaminated by the bacterium, easily so in Haiti because the country lacks a proper sewage and sanitation system.

The scene turned ghastly. People fell dead in the streets. Government employees scooped up bodies and buried them. Aid workers stretched thin by the earthquake set up makeshift rehydration units, handed out soap and clean water and tried to save lives.

"If you have cholera, you and death are so close together," recalled 59-year-old Pierre Antoine, who was holed up at a treatment center with the illness for two weeks. "I don't wish this upon anyone."

The report's findings have met plenty of scientific pushback. Many scientists say the second cholera strain cited by the report was unlikely to have caused the outbreak because it's nontoxic, naturally inhabits bodies of water around the world and is unlikely to trigger epidemics. Unlike the strain that sickened so many Haitians, this one is believed to cause only mild diarrhea and isn't life-threatening.

In this picture taken June 22, 2012, U.N. peacekeepers from Paraguay, patrol next to a hospital run by the relief organization Doctors Without Borders (MSF) in Port-au-Prince, Haiti. The death rate from the Haiti cholera epidemic that has killed more than 7,000 people over the past two years has finally ebbed, but the debate about the source of the disease has only grown more heated. A study led by a University of Maryland cholera expert renowned in the scientific community, found that Haiti had not just one cholera strain but a second one that may have been lurking undetected prior to the arrival of a United Nations peacekeeping battalion from Nepal. (AP Photo/Dieu Nalio Chery)

French epidemiologist Renaud Piarroux pointed out how Hurricane Tomas came two weeks after the outbreak began and that a decade-long review of temperatures revealed no evidence of unusually high temperatures that summer.

"The perfect storm is a perfect lie," said Piarroux, who's writing a book on the source of cholera in Haiti. "This is not a scoop. It means nothing."

Drawing on 50 years of data pulled from the National Oceanic and Atmospheric Administration, Colwell maintains that 2010 was a warm year with "anomalously high air temperatures" in the months before the outbreak. This, in combination to the destruction of water and sanitation access, as well as widespread flooding caused by the hurricane, created conditions that would favor the outbreak.

She also said Piarroux's data are incomplete and that "statistically nothing meaningful can be obtained."

If anything, the paper has spurred reaction everywhere from Internet chat rooms to university campuses.

Guy Knudsen, an attorney and microbial ecology professor at the University of Idaho, published a response on his personal website saying the paper's argument has "several flaws" and doesn't provide strong backup for its findings.

John Mekalanos, a cholera expert and professor of microbiology at Harvard Medical School, and his colleagues are preparing a formal response.

Colwell's report is being put under the microscope not just by public health experts and officials but by advocates of various political stripes who want to either blame the U.N. peacekeeping force for the epidemic or absolve the mission of responsibility. The world body is at the center of a legal complaint even though it enjoys immunity in Haiti and other countries because of a Status of Forces Agreement. The outcome could change the way the U.N. missions can be held legally accountable.

The investigations come as Haiti sees cholera fatalities taper amid a widespread sanitation campaign, coupled with vaccinations.

Meanwhile, the U.S. Centers for Disease Control and Prevention in Atlanta and the U.N.'s World Health Organization argued that the source might never be found and that finding the answer wasn't a priority. Still, suspicion grew that peacekeepers were at fault amid reports of sanitation problems at a base that was housing U.N. troops from Nepal. Anti-U.N. protests followed, and U.N. Secretary General Ban Ki-moon ordered an investigation.

The resulting report revealed that there was a "perfect match" between cholera strains found in Haiti and Nepal. Still, the study pulled back on pinning blame: "Haiti cholera outbreak was caused by the confluence of circumstances ... and was not the fault of, or deliberate action of, a group or individual."

A study published in a CDC journal, however, said evidence strongly indicated U.N. involvement: "Our findings strongly suggest that contamination of the Artibonite and 1 of its tributaries downstream from a military camp triggered the epidemic."

Led by Renaud Piarroux, the article also said there is "an exact correlation" in time and place between the arrival of the Nepalese battalion from an area of its South Asian homeland that was experiencing a cholera outbreak and the appearance of the first cases in a river near a U.N. base a few days later.

Against such evidence, Colwell defended her study, saying the cause might not be any single individual or group.

"I think it's much more complex," Colwell said. "The difficulty of an actual attribution is that there's no evidence whatsoever that it was there prior to the explosive outbreak."

Aside from a brief effort following a 1991 cholera outbreak in Latin America, the CDC hadn't done routine testing for cholera in Haiti before the outbreak, said CDC spokesman Thomas Skinner.

The studies could have dramatic consequences for the U.N. mission in Haiti, which has overseen two democratic transfers of power since its arrival in 2004 and provided stability.

The Boston-based Institute for Justice & Democracy in Haiti filed a rare

complaint last year on behalf of Haitians who showed cholera-like symptoms, seeking damages that they hope will be used in part to build up the country's tattered infrastructure. The various studies will likely play into the case, which is under review by the U.N.'s legal office in New York.

"It doesn't change anyone's responsibility for the cholera epidemic," said Brian Concannon, director of the Institute for Justice & Democracy in Haiti. "The report doesn't contain evidence that the cholera epidemic victims suffered from anything besides the cholera strain brought to Haiti by the U.N."

When asked what she thought of the debate, Dr. Joceline Brunache Pierre-Louis of the Haitian Health Ministry paused.

Even with the country's problems in sanitation and its broken infrastructure, Pierre-Louis said, "we never had this disease."