

Gargantuan Issue Of The International Journal Of Epidemiology Marks The End Of Editorship By George Davey Smith and Shah Ebrahim

Last Publication Dated December 2016 Includes Debate On Approaches To Causality In Epidemiology

The last issue of the International Journal of Epidemiology co-edited by George Davey Smith and Shah Ebrahim appeared in print in late March 2017. It is a gargantuan issue even by the standards of the IJE which had grown enormously in size in recent years. The final issue contains more than 75 articles, letters, and other published items spread out over 500 pages. Many of the articles which appear in

the hard copy were actually published in Advance Access online over a period of 15 months from January 2016 to March 2017.

Final Issue

The much awaited issue contains a special section on causality in epidemiology where many articles

- Causality cont'd on next page

Epidemiologist Knighted In The French Legion Of Honor For His Work On Cholera In Haiti

French officials announced earlier this month that epidemiologist Renaud Piarroux has been selected for the Legion of Honor, the highest French order of merit for military and civil achievements. Since this is a rare honor for members of the profession, we sought to learn more about what Piarroux did to earn the award and how he came to be nominated.

To get this information, we called on former UCLA epidemiologist Ralph Frerichs who has had a longstanding interest in John Snow's work on cholera in London and in Piarroux's work on cholera in Haiti. He is the well-known creator of a website about John Snow and has more recently authored a book entitled "Deadly River" about the introduction of

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cholera into Haiti in 2010.

Following is Frerich's account of Piarroux's work which earned him the Legion of Honor and an update on the recent progress being made to eradicate cholera from Haiti after a long delay in mounting aggressive control efforts. Another story worth telling.

Special Report: Knighted French Epidemiologist And Cholera Elimination in Haiti

By Ralph Frerich

When cholera first appeared in Haiti in October 2010, there was scant interest in CDC or PAHO in investigating how this never-before-seen disease had made its entrance. Instead, the two international institutions were dealing with treatment and care, assisting the overwhelmed Haitian society in addressing the epidemic. Wanting immediate answers, the Haitian government, with the help of the French embassy in Port-au-Prince, reached out to Marseille-based epidemiologist **Renaud Piarroux**. A short while later, his three-week investigation began.

Included in his findings was that cholera was brought to Haiti by United Nations peacekeepers from Nepal, starting an epidemic via a sewage spill into the great river serving Haiti's breadbasket. It then quickly spread throughout the country. Given the image and power of the United Nations, the apparent indifference of the United States, the counter theories of other scientists, and even a critique in *The Lancet Infectious Diseases* (1), Piarroux's

findings of UN involvement in the origin were not immediately believed or supported.

But after six years of additional field research, including development of a rapid response elimination strategy, Piarroux learned in April 2017 that he had been nominated for the highest civilian award offered in France, *Au grade de chevalier* in the *Ordre national de la Légion d'honneur*, or knighthood in the National Order of the Legion of Honor.

Since its beginning, the Haiti epidemic has officially tallied 806,000 cholera cases and 9,500 deaths, the largest on-going cholera epidemic in the world. Moreover, the United Nations has been severely criticized by legal and human rights groups for refusing a full apology and legal accountability for bringing cholera to Haiti.

Nomination

How did Piarroux's knighthood honor happen? In late 2016, Bernard Meunier, President of the French Academy of Sciences, read *Deadly River: Cholera and Cover-up in Post-Earthquake Haiti* (Cornell University Press, 2016). The book told of Piarroux's discoveries and actions, written in close collaboration with the Frenchman, providing an insider's view of the workings and thoughts of a medical epidemiologist, more public health professional and scientist than politician. Meunier contacted me in November 2016, thanking me for writing the "well-documented book," and noted, "truth is coming slowly while complex organizations are fighting for their own survival, rather than tending to their duties." Meunier

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learned more of Piarroux's 30-year career and on-going efforts and achievements in Haiti via research articles and the book epilogue at www.deadlyriver.com. In the coming months he submitted Piarroux's name as a candidate for knighthood in the Legion of Honor, formally accepted and officially posted on April 14, 2017 (2).

Background

As noted in *Deadly River*, when cholera in Haiti began, Piarroux was the department chief of the laboratory of parasitology and medical mycology at academic *Hôpital de la Timone* in Marseille, France, as well as a professor at the medical school of *Université d'Aix-Marseille*. Through his service on humanitarian missions in Afghanistan, Comoros, Honduras, Ivory Coast, and the Democratic Republic of the Congo, and his PhD studies in microbiology and tropical medicine, Piarroux had developed an interest in and a deep understanding of how cholera spreads through regions and communities – and of how epidemics can be controlled and even eliminated. In 1999, the *Médecins du Monde* team he was leading actually eliminated cholera from Grande Comore, the largest island in the Comoros nation off Africa's east coast. But it was the African country of Madagascar, an island nation similar in many ways to Haiti, which offered the best example of a cholera elimination strategy.

Example

Cholera had come to Madagascar in 1999 after decades of absence. The disease plagued the country for three

years and was then eliminated. Early on, local health efforts had resorted to several control efforts, including a reporting system to identify suspicious cases and deaths, immediate treatment (including intravenous rehydration), public education, and disinfection of houses. Mass immunization was never part of the weaponry. Piarroux and his Haitian team reasoned the pathogenic form of *Vibrio cholerae* would not become rooted in the Haitian environment independent of human amplification, and that with the quick treatment of existing cases, a rapid response approach similar to that in Madagascar could be effective in Haiti. They developed the method which featured rapid case finding and treatment using a map-based surveillance system, and treatment, education and water purification tablets issued to those living in surrounding households to interrupt further spread.

Intervention Implementation

Following local turmoil and management problems, the rapid response elimination effort in Haiti slowed for a while but then gathered steam following Hurricane Matthew in October 2016. UNICEF had become a major supporter of the effort, yet as documented in a recent report (3), the number of rapid response teams throughout the nation in early 2016 had dwindled to 32. They increased the number to 47 just prior to Hurricane Matthew, when cholera had again exploded in the southwestern region of the country.

In the weeks that followed, 41 additional rapid response teams were

mobilized, bringing the national number to 88. The epidemic peaked at over 1,400 suspected cholera cases per week immediately after the hurricane but then dramatically declined, aided a few weeks later by a limited one-dose (of a two-dose vaccine) immunization program in the hardest hit area.

By the end of the sixth week in 2017, the number of weekly cases had been reduced to nearly 200 and according to government statistics, there were only a handful of deaths.⁴ The collaborative elimination effort of Piarroux and his Haitian colleagues continues. But like John Snow in the mid-1800s, it appears that they have found their pump handle, hopefully leading to the end of Haiti's epidemic.

¹ Lancet Infectious Diseases. Editorial, "As Cholera Returns to Haiti, Blame is Unhelpful."

Vol. 10, no. 12 (2010): 813.

² LeClerc J-M. Légion d'honneur, *Le Figaro*, April 17, 2017.

³ UNICEF, Haiti Humanitarian Situation Report, 2017-02, March 7, 2017.

⁴ Ministère Santé Publique et de La Population (MSPP), Direction d'Epidémiologie de Laboratoire et de Recherches (DELR). Rapport du Réseau National de Surveillance, Sites Choléra. 6^{ème} Semaine Epidémiologique, 2017.

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