Cholera outbreak in the West and Central Africa: Regional Update, 2014 (WEEK 49)

WCA trends in cholera cases, 2013 and 2014

Cumulative attack rate, weeks 1-49, Nigeria

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Glucose - but Not Rice-Based Oral Rehydration Therapy Enhances the Production of Virulence Determinants in the Human Pathogen *Vibrio cholerae*

Cholera research has so far mainly focused on the causative agent, the bacterium *Vibrio cholerae*, or on disease treatment, but rarely were results from both fields interconnected. Indeed, the treatment of this severe diarrheal disease is mostly accomplished by oral rehydration therapy (ORT). ORT aims at rehydrating patients through the provision of water and oral rehydration salts; the latter being composed of electrolytes as well as glucose as a carbon source. Although glucose-based ORS is commonly used to treat diarrheal diseases and is recommended by the WHO, field studies on cholera indicated that rice-based ORT performs better than glucose-based ORT. Here, we investigated the impact that glucose, starch, or other carbon sources exert on *V. cholerae*. We demonstrated that glucose leads to an increased expression of the major virulence genes in the pathogen and, accordingly, to an enhanced production of cholera toxin during *in vitro* experimentation. Because the cholera toxin is primarily responsible for the severe symptoms that are associated with the disease, our study highlights the negative effects of glucose-based ORT. Next, we used a spatially explicit epidemiological model to demonstrate that the better performing rice-based ORS could have a significant impact on epidemic progression based on the recent outbreak of cholera in Haiti.

Using Mobile Health (mHealth) and Geospatial Mapping Technology in a Mass Campaign for Reactive Oral Cholera Vaccination in Rural Haiti

Author summary: The World Health Organization (WHO) recently endorsed the creation of a global oral cholera vaccine (OCV) stockpile as part of an integrated, strategic framework to address the re-emerging threat that cholera causes worldwide. In conjunction, the WHO also called for continued monitoring and evaluation around the use of OCV in different settings. In response to the cholera epidemic in Haiti that began in October 2010, Partners In Health, an implementing partner of Haiti’s Ministry of Health, vaccinated 50,000 Haitians in two rural communities in the Artibonite Valley in 2012. In this paper, the authors describe the use of mobile health (mHealth) technology for data collection and geospatial mapping to document this rural OCV campaign, focusing on the utility, benefits, and challenges of mHealth in a reactive campaign in the midst of the ongoing epidemic.