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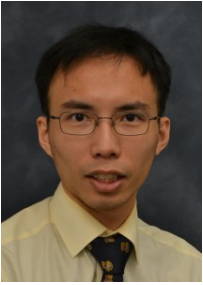
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Cholera Transmission Dynamic Models

March 18, 2014



Dr. Isaac Fung, assistant professor of epidemiology examines cholera transmission dynamic models for public health practitioners. Great progress has been made in mathematical models of cholera transmission dynamics in recent years. However, little impact, if any, has been made by models upon public health decision-making and day-to-day routine of epidemiologists. This paper provides a brief introduction to the basics of ordinary differential equation models of cholera transmission dynamics. We discuss a basic model adapted from Codeço (2001), and how it can be modified to incorporate different hypotheses, including the importance of asymptomatic or inapparent infections, and hyperinfectious *V. cholerae* and human-to-human transmission.

We highlight three important challenges of cholera models: (1) model misspecification and parameter uncertainty, (2) modeling the impact of water, sanitation and hygiene interventions and (3) model structure. We use published models, especially those related to the 2010 Haitian outbreak as examples. We emphasize that the choice of models should be dictated by the research questions in mind. More collaboration is needed between policy-makers, epidemiologists and modelers in public health.

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