

Update on Cholera Serology Work

Andrew Azman

with

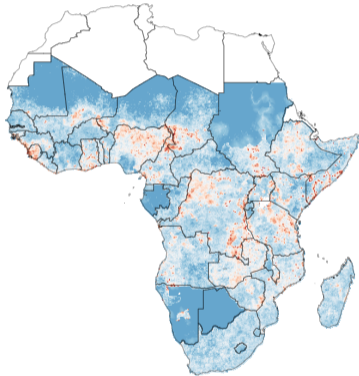
Emily Gurley, Daniel Leung, Firdausi Qadri, Jason Harris, Francisco Luquero, Justin Lessler and many others

GTFCC Epi/Surveillance Working Group :: 15 April 2019



Counting Cholera Cases

Cholera Risk and Burden



Lessler et al, 2018, The Lancet

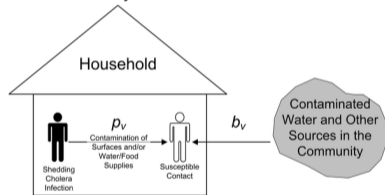
OCV Effectiveness and Impact



WASH Effectiveness and Impact



Transmission Dynamics

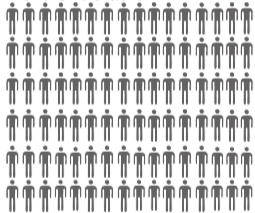


Sugimoto et al, 2015, PLoS NTD



Challenges in Counting Cases

100 Infected with
Vibrio Cholerae O1



Symptomatic



Seek Care



Identified and Reported as Cholera



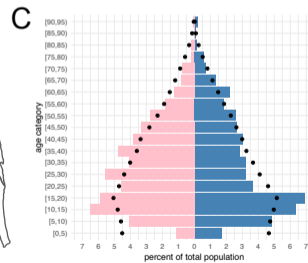
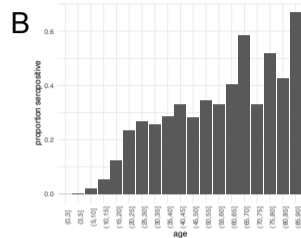
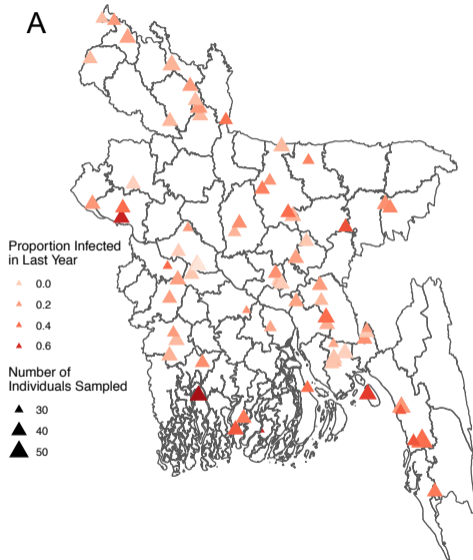


INFECTIOUS DISEASE

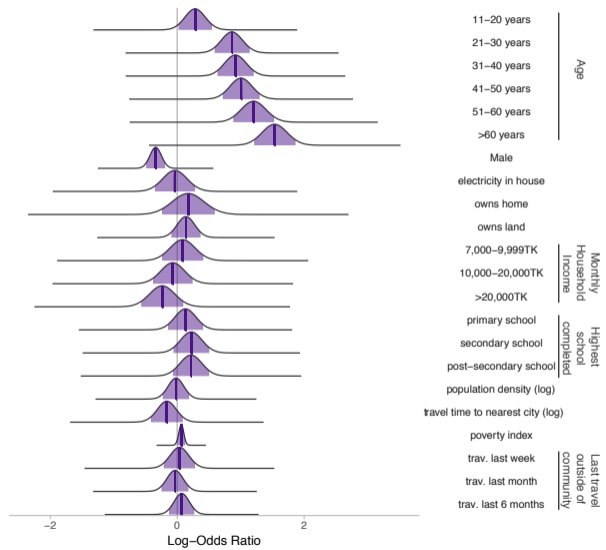
Estimating cholera incidence with cross-sectional serology

Andrew S. Azman^{1*}, Justin Lessler¹, Francisco J. Luquero^{2,3}, Taufiqur Rahman Bhuiyan⁴, Ashraful Islam Khan⁴, Fahima Chowdhury⁴, Alamgir Kabir⁴, Marc Gurwith⁵, Ana A. Weil^{6,7}, Jason B. Harris^{6,8,9}, Stephen B. Calderwood^{6,7}, Edward T. Ryan^{6,7,10}, Firdausi Qadri⁴, Daniel T. Leung^{11,12}

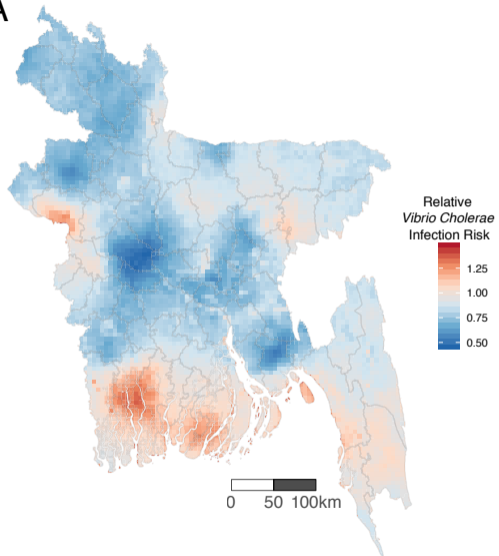
- 2778 individuals (673 households) randomly sampled nationally
- Data collection from 12-2015 to 1-2016
- Serum tested for suite of immunologic markers
 - vibriocidal (Ogawa and Inaba)
 - anti-CTB IgG, IgM and IgA
 - anti-LPS IgG, IgM and IgA



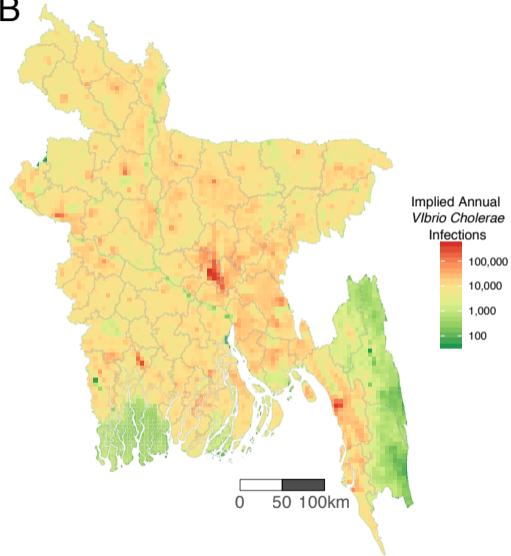
Posterior Log-Odds Ratio Distributions
with 95% credible intervals

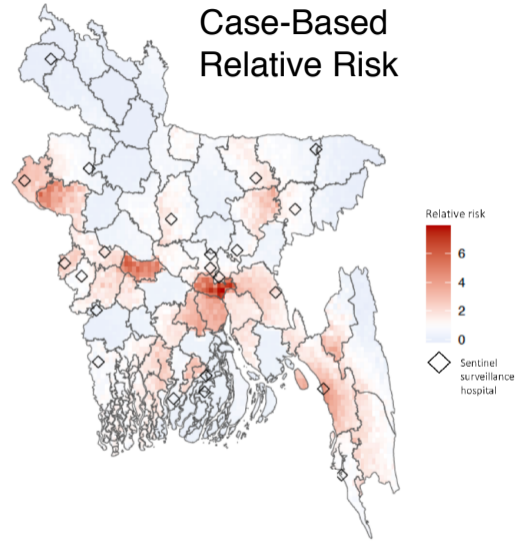
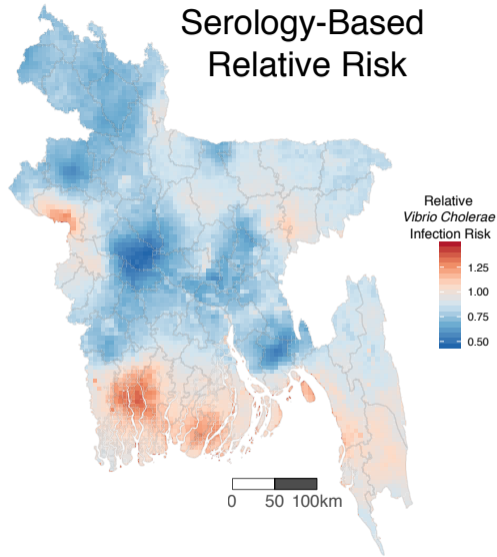


A



B





- Refinement of models to identify recent infections
- Simplification of antibody panel and identification of new markers
- Methods to discriminate between vaccinees and natural infections
- Guidance on serosurvey design and sample size