

July 2023 Thematic Committee Briefing

Theme #1: Modeling Pandemic Potential for Disease Surveillance

The PIPP Phase I PILOT (Predictive Intelligence for Limiting Outbreak Threats) project comprises three themes, and each theme is spearheaded by a thematic committee. The aim of Theme 1, Modeling Pandemic Potential for Disease Surveillance, is to identify scientific gaps and best practices in assessing the pandemic potential of a specific pathogen in a given context.

Since April 2023, our thematic committee has continued to work on several research projects to better characterize important parameters in the early days of an infectious disease emergency. Led by our trainee Kathryn Schaber, PhD (Postdoctoral Fellow, Harvard Medical School) with the assistance of Sagar Kumar (PhD Student, Northeastern University) and Baker Lubwama (AI/ML Intern, Boston Children's Hospital/Harvard Medical School), we have developed a disease modeling framework using social media, news reports, and situation reports to account for delayed or waning effects of multiple interventions, changing fatality rates, and unknown index case dates in the context of Ebola Virus Disease. This manuscript was preprinted on medRxiv in June 2023 with plans to submit to a peer-reviewed journal shortly.

In tandem, Dr. Schaber and Sonja Marie Neumeister, MPH (Research Assistant, University of California Davis) are continuing to refine and develop a meta-analysis regarding modeling methods for reproduction number estimation. Furthermore, Ms. Neumeister also began work on a scoping review with the assistance of undergraduate student Meha Reddy Krishnareddigari (University of California Davis) to better define existing gaps in global disease surveillance and event-monitoring tools and to identify opportunities to refine early warning systems for communicable disease emergencies.

Our thematic committee consists of Maimuna Majumder, PhD, MPH (PI) and Angel Desai, MD, MPH (co-PI); Sangeeta Bhatia, PhD (Imperial College London); Emily Ricotta, PhD, MSc, (NIAID); and Thomas McAndrew, PhD (Lehigh University). Our next committee meeting is tentatively planned for Summer 2023.