Abstract: Professors Bari (by zoom) and Coffee, from the Courant Institute of Mathematics and Grossman School of Medicine respectively, will speak on the development of a tool to better predict Clinical Severity in COVID, based on Predictive Analytics, a form of Machine Learning. The objectives of this research are: (1) to algorithmically identify the combinations of clinical characteristics of COVID-19 that predict outcomes, and (2) to develop a tool with AI capabilities that will predict patients at risk for more severe illness on initial presentation. The predictive models learn from historical data to help predict who will develop acute respiratory distress syndrome (ARDS), a severe outcome in COVID-19. The team has also worked on predicting behavior changes that precipitate COVID surges based on google search volumes and use sentiment analysis to predict COVID vaccine hesitancy.

Biography: Megan Coffee is an infectious doctor and researcher working on response to and research on epidemics in global settings, combining both clinical and computational approaches. She is a clinical assistant professor at NYU Grossman School of Medicine, an attending physician in infectious diseases at Bellevue Hospital in NY, NY and teaches on prevention and response to outbreaks in global health at Columbia University.

She collaborates with Professor Bari on developing AI tools to better predict disease severity in COVID, while also looking at using machine learning to better recognize disease transmission and vaccine hesitancy, while also looking at ethics in AI in infectious disease work.

She is an advisor on communicable diseases at the International Rescue Committee, where she had been involved directly on the ground in the Ebola response in Sierra Leone and supporting other infectious disease responses, from cholera to Lassa to HIV and TB, including in Nigeria, Bangladesh, Liberia, Kenya, Uganda,
and Cote d'Ivoire. Through the IRC, she has worked with the WHO in Geneva, UN, CDC, US State Department, and other governments. She currently is involved in remote assistance for COVID response and assisting emergency medicine fellows using telemedicine in resource limited settings.

She is the founder and director of Ti Kay, Inc for the last 10 years, supporting healthcare providers and telemedicine options for TB and HIV patients in Haiti after running an HIV/TB ward at the main public hospital in Port-Au-Prince, Haiti with a team of Haitian nurses for 4 years after the earthquake providing care for thousand of patients.

She completed her undergraduate and medical school education at Harvard University and her doctorate at the Wellcome Trust Centre for the Epidemiology of Infectious Diseases at Oxford University, where she worked on programming mathematical models of infectious disease epidemics, focusing on HIV and population movement in southern Africa, in Professor Roy Anderson's group. She completed her residency in internal medicine at Massachusetts General Hospital and her fellowship in infectious diseases at University of California at San Francisco, with research at UC Berkeley. She also works as a telemedicine doctor, answering questions about COVID around the US.