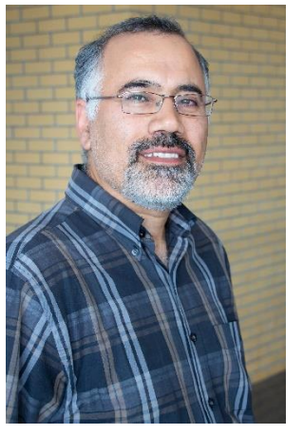
Canadian Centre for Disease Modelling
Distinguished Lecture Series
Modeling and Control of Infectious Diseases

Generating and Using Simulation-based Contacts Mixing Patterns to Model SARS-CoV-2 Transmission: Case of Dialysis Unit



Dr. Ali Asgary

York University

Thursday, November 26

10:30 am - 11:30 am (Eastern Time)

Webinar: Connect at
https://yorku.zoom.us/j/99459742714?pwd=cTA2Unp3VXR5SnozWTk4Vktxa24rdz09
Also see announcement at cdm.yorku.ca

Abstract: The COVID-19 pandemic poses a significant and unique challenge to End-Stage Kidney Disease (ESKD) patients and their care providers. The ESKD patients need to visit dialysis units three or more times a week while in close proximity with other patients, nurses, physicians, and other staff. This lecture demonstrates our team efforts to model the SARS-CoV-2 transmission in a typical but large dialysis unit in Canada using a two-stage hybrid simulation and modelling approach. In the first stage a micro-scale simulation of the operations and workflow of the dialysis unit was developed using a combination of discrete events and agent-based simulation. In this stage social contacts mixing calculator was added into the simulation to count the average number of contacts between the ESDK patients and different types of staff. In the second stage, an agent-based disease transmission model was created to examine the SARS-CoV-2 among the agents under different assumptions, scenarios, and random testing. The results of this study show that in the absence of contacts mixing information at such settings, simulations can be used to generate and estimate contacts mixing matrices and model disease transmission and investigate various mitigation measures.

Bio: Ali Asgary (PhD) is an associate professor of disaster and emergency management at York University. He is also the executive director of York University's Advanced Disaster, Emergency and Rapid-response Simulation (ADERSIM). His research focuses on simulation, modelling, geomatics, artificial intelligence, and virtual and augmented reality applications in disaster and emergency management, disaster recovery and business continuity. Dr. Asgary is a member of the PHAC external modelling group and serves as the principal investigator or co principal investigator of several research projects including some COVID-19 projects funded by the Public Health Agency of Canada (PHAC), University Health Network (UHN), Canadian Institute of Health Research (CIHR), and Social Sciences and Humanities Research Council (SSHRC).

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