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**Qimin Huang\*** (qxh119@case.edu), **David Gurarie**, **Anirban Mondal** and **Martial Ndeffo-Mbah**. *Individual-based modeling of COVID-19 in local community settings*. Preliminary report.

Individual based modeling (IBM) of disease transmission offers an attractive alternative to population-based approaches, as it allows a detailed account of biological (risk) factors, environment, and behavior. This is particularly relevant in local community settings (hospital, workplace, school), where finite population size and host heterogeneity, in terms social interactions and disease progression, make a population-based approach impractical.

We develop such IBM methodology to simulate COVID-19 outbreaks in local settings, and explore different control-mitigation strategies. Our models feature multiple disease pathways (asymptomatic, mild and severe) typical of COVID-19, as well as heterogeneous host communities with different susceptibility levels and structured social contacts.

Two typical IBM examples include (i) hospital, made of interacting healthcare workers and patients, (ii) school/college, where students aggregate in classrooms, dorms, and engage in other (social, dining, sport) activities. In both cases, we used available data to set up and calibrate our models. Different control strategies were explored. The efficacy of each intervention and resources required to prevent or mitigate the outbreak were assessed. (Received August 11, 2020)