1135-37-443 **Gerardo Chowell*** (gchowell@gsu.edu). *Epidemic Growth Scaling: Implications for Disease Forecasting and Estimation of the Reproduction Number.*

The increasing use of mathematical models for epidemic forecasting has highlighted the importance of designing reliable models that capture the baseline transmission characteristics of specific pathogens and social contexts. Here, we review recent progress on modeling and characterizing early epidemic growth patterns from infectious disease outbreak data, and survey the types of mathematical formulations that are most useful for capturing a diversity of early epidemic growth profiles, ranging from sub-exponential to exponential growth dynamics. Specifically, we review mathematical models that incorporate spatial details or realistic population mixing structures, including meta-population models, individual-based network models, and simple SIR-type models that incorporate the effects of reactive behavior changes or inhomogeneous mixing. In this process, we also analyze simulation data stemming from detailed large-scale agent-based models previously designed and calibrated to study how realistic social networks and disease transmission characteristics shape early epidemic growth patterns, general transmission dynamics, and control of international disease emergencies such as the 2009 A/H1N1 influenza pandemic and the 2014-2015 Ebola epidemic in West Africa. (Received September 03, 2017)