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Effects of Behavioral Changes in Smallpox and Influenza Models

Communicable diseases are highly sensitive to how rapidly people reduce their contact activity patterns and to the precautions that the population takes to reduce the transmission of the disease. Recent experiences with the H1N1 pandemic show that an outbreak of a deadly disease would generate dramatic behavioral changes. However, models for infectious diseases have focused on analyzing the impact of traditional intervention strategies such as isolation and vaccination. In this talk I will present a model in which some individuals lower their daily contact activity rates or wear masks once an epidemic has been identified in their community. I will demonstrate that even gradual and mild behavioral changes can have a dramatic impact in slowing the epidemic and reducing the total number of cases. I conclude that for simulations of infectious diseases to be useful, they must consider the impact of behavioral changes. This is especially true if the model predictions are being used to guide public health policy.