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### **Mitigating Infectious Disease Outbreaks<sup>1</sup>**

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The emergence of new, transmissible infections poses a significant threat to human populations. As the 2009 novel influenza A/H1N1 pandemic and the 2014-2015 Ebola epidemic demonstrate, we have observed the effects of rapid spread of illness in non-immune populations and experienced disturbing uncertainty about future potential for human suffering and societal disruption. Clinical and epidemiologic characteristics of a newly emerged infectious organism are usually gathered in retrospect as the outbreak evolves and affects populations. Knowledge of potential effects of outbreaks and epidemics and most importantly, mitigation at community, regional, national and global levels is needed to inform policy that will prepare and protect people. Study of possible outcomes of evolving epidemics and application of mitigation strategies is not possible in observational or experimental research designs, but computational modeling allows conduct of ‘virtual’ experiments. Results of well-designed computer simulations can aid in the selection and implementation of strategies that limit illness and death, and maintain systems of healthcare and other critical resources that are vital to public protection.

<sup>1</sup>Mitigating Infectious Disease Outbreaks