1154-92-964 **Scott Greenhalgh***, 515 Loudon Road, Loudonville, NY 12211, and **Carly Rozins**. *Novel compartmental models of infectious disease transmission.*

Many methodologies in disease modeling are invaluable in the evaluation of health interventions. Of these methodologies, one of most fundamental is compartmental modeling. Compartmental models have many different forms with one of the most general characterizations occurring from the description of disease dynamics with nonlinear Volterra integral equations. Despite this generality, the vast majority of disease modellers prefer the special case where nonlinear Volterra integral equations reduce to systems of differential equations through the traditional assumptions that 1) the infectiousness of a disease corresponds to incidence, and 2) the duration of infection follows either an exponential or Erlang distribution. However, these assumptions are not the only ones that simplify nonlinear Volterra integral equations in such a way. In this talk, we illustrate new assumptions that reduce systems of nonlinear Volterra integral equations to a class of novel compartmental models. We demonstrate the consistency of these novel compartmental models to their traditional counterparts, and provide a novel compartmental model for a Pearson distributed duration of infection. (Received September 12, 2019)