A Discrete Age Structured Model of Hantavirus in a Rodent Reservoir in Paraguay

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Many rodent-borne hantaviruses are zoonotic pathogens that can cause disease in humans through inhalation of rodent excreta. To evaluate the prevalence of the Jaborá virus (JABV) over time within its rodent reservoir, *Akodon montensis*, we formulated a mathematical model with multiple rodent age classes and unique infection class progression features. We then parameterized the model with data collected from a survey of of JABV harbored by *Akodon montensis* in the Mbaracayú Reserve in Paraguay. Our model incorporates three types of infection over the lifetime of the rodent as well as a recovered class. A new feature of the model allows transition from the latent to the persistently-infected class. With a more complete age and disease structure, we are better able to identify the driving forces of epidemiology of hantaviruses in rodent populations.

References