1116-Z1-332 **Laurel A Ohm*** (ohmxx039@umn.edu). *A mathematical model of broad-spectrum antibiotic treatment of leptospirosis: the risk of antibiotic resistance.*

Leptospirosis, a zoonotic infection affecting people globally, presents unique epidemiological challenges as disease propagation depends on local environmental conditions rather than direct human-to-human contact. *Leptospira interrogans* is spread via urine of infected animals and can survive for months without a host in aquatic environments. Outbreaks in Southeast Asia and Latin America are often combatted by widespread distribution of broad-spectrum antibiotics among residents in the vicinity of the outbreak. While leptospirosis itself has thus far not demonstrated resistance to antibiotics, the presence of other strains of virulent bacteria, especially MRSA, in the surrounding environment indicates that antibiotic resistance may threaten public health. To analyze the effects of mass, non-targeted antibiotic administration following a leptospirosis outbreak, we develop an ODE model of leptospirosis transmission coupled with the dynamics of antibiotic-resistant bacterial infections. Uncertainty and sensitivity analyses of model parameters highlight the prominent role environmental factors play in the persistence of leptospirosis and antibiotic-resistant infections, indicating that disease control efforts may need to focus on addressing unsanitary living conditions. (Received August 25, 2015)