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Jin Wang*, Department of Mathematics, University of Tennessee at Chattanooga, Chattanooga, TN 37403. *Analyzing the intrinsic bacterial dynamics in waterborne infections.*

The intrinsic dynamics of pathogenic bacteria often play an important role in the transmission and spread of waterborne infectious diseases. We present mathematical models for waterborne infections and analyze two types of nonlinear bacterial dynamics: logistic growth, and growth with Allee effects. For the model with logistic growth, we find that regular threshold dynamics take place, and the basic reproduction number can be used to characterize disease extinction and persistence. In contrast, the model with Allee effects exhibits much more complex dynamics, including the existence of multiple endemic equilibria and the presence of backward bifurcation and forward hysteresis. (Received February 07, 2018)