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Rachael L Miller* (rmiller@math.utk.edu), **Suzanne Lenhart** and **Elsa Schaefer**. *Optimal intervention strategies for a cholera outbreak.*

Caused by the bacterium *Vibrio cholerae*, cholera has caused deadly epidemics for almost two hundred years. However, no strategy for its effective control exists today. Past research has shown that *Vibrio cholerae* passes from a hyper infectious state (HI) to a less infectious state (non-HI) within hours. We present a system of ordinary differential equations modeling the interactions between S-I-R individuals and HI and non-HI vibrios. Incorporated into the model are the effects of sanitation, hydration therapy, vaccination and antibiotics as possible control methods. Using optimal control theory, we present optimal intervention schedules one might use in controlling the spread of cholera. (Received September 02, 2008)