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Elsa Schaefer* (elsa@marymount.edu), Department of Mathematics, Marymount University, 2807 North Glebe Road, Arlington, VA 22030, and **Olcay Akman, K. Renee Fister, Holly Gaff, Suzanne Lenhart** and **Marina Romadan**. *Approaches in parameter and model selection for the study of cholera.*

We first consider multiple model structures for cholera that are supported by a mechanistic understanding of the disease. For each possible model, we use genetic algorithms to find multiple parameter sets that describe available data sets equally well. We explore how established model comparison criteria (AIC) can be used to select the most appropriate model to support the available data, and we examine uncertainty in those recommendations and whether alternative criteria can provide additional insights. Finally, we discuss a comparison of intervention strategies provided by optimal control as an important consideration in model selection. (Received September 12, 2014)