1135-34-732 **Neha Murad*** (nmurad@ncsu.edu), 2810 Brigadoon Drive, Apt 21, Raleigh, NC 27606, and **Harvey Thomas Banks** and **Rebecca Everett**. *The iterative process of quantitative modeling of infection dynamics in renal transplant recipients.* Preliminary report.

Mathematical models play a significant role in providing a numerical and analytical perspective to biological models. In the presence of data, inverse problems are performed to estimate unknown parameters for these models. Statistical error models used during inverse problem formulations help quantify the uncertainty and variability that arises with using experimental data. This process of applying mathematical and statistical techniques for modeling physical processes is an iterative one and often leads to new insights with every new iteration. There is a relatively recent research effort in modeling the mechanisms of solid organ transplants, specifically kidney transplants. We present mathematical and statistical models to illustrate the iterative process of modeling for renal transplant recipients infected by BK virus by improving the current mathematical model to be more biologically accurate. Using a second order difference-based method to eliminate statistical error model misspecification, we also show how modified residuals from the inverse problem can be used to detect discrepancies in mathematical model formulation. (Received September 13, 2017)