1040-92-187 **Sanjukta Hota*** (shota@fisk.edu), 1000 17th Avenue North, Nashville, TN 37208, and **Philip Crooke**, **John Rotschafer** and **John Hotchkiss**. *Computational and dynamic systems approaches to peritoneal dialysis associated peritonitis.* Preliminary report.

This paper presents a mathematical model to describe the optimal characteristics for antibiotic resistance in the treatment of peritoneal dialysis associated peritonitis (PDAP). The peritoneal dialysis technique is relatively simple and does not require expensive apparatus but it suffers from the disadvantage that many patients contract peritoneal infections during treatment, especially where this is prolonged for several weeks or months. These infections can be treated either orally and intramuscularly or locally, by the addition of antibiotics to the dialysis fluid, but high concentration of antibiotic often used can be harmful. So far an optimal antibiotic therapy does not exist. In this paper we constructed a pharmacokinetic profile of antibiotic administration during peritoneal dialysis and determined numerically the effective timing, levels and the dosing regimen for the treatment of PDAP. A Monte Carlo implementation was used to reflect population-level variability in potentially important model parameters, such as, minimal inhibitory concentration (MIC), extraperitoneal clearance of antimicrobial, peritoneal mass transfer coefficient (MTAC) for the antimicrobial, and the residual intraperitoneal volume. (Received February 13, 2008)