

Welcome to the Special Edition of Recent Advances in Pharmacokinetics and Pharmacodynamics

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I am pleased to welcome you to the Special Edition of Advances in Pharmacoeconomics and Drug Safety that focuses on Recent Advances in Pharmacokinetics (PK) and Pharmacodynamics (PD). I do hope that you find the manuscripts in this edition of interest. This edition provides a wide scope of related articles in the area of PK/PD. Articles range from highly theoretical articles related to Bayesian forecasting to very practical articles that deal with very common issues in clinical practice such as vancomycin dosing in morbidly obese patients. Specifically, readers who have an interest in Bayesian pharmacokinetics and pharmacodynamics will appreciate the article by Dr. Verotta on covariate modeling PK/PD studies and that of Drs. van der Meerm and Neef on optimum sampling strategies. This latter paper argues that Maximum A Posteriori Bayesian (MAPB) estimation be used for pharmacokinetic parameter estimation over multiple regression analysis in Bayesian forecasting studies. An optimal sampling strategy using MAPB estimation is used to calculate sampling times that will provide the most information on the parameters to be estimated. This method is designed to improve the quality of parameter estimation obtained from Bayesian forecasting studies. There are 2 papers in this Special Edition that relate to pharmacodynamic modeling of antimicrobial agents. The manuscript by Dr. Cha, Michienzi and Hsaiky discusses novel dosing strategies for antimicrobial agents that optimize pharmacokinetic/pharmacodynamic properties. They highlight the need for expanded experimental and prospective clinical studies that incorporate resistance endpoints. The manuscript by John J.S. Cadwell describes the new technologies used in these studies including the advantages of using hollow-fiber bioreactive cartridges

in two-compartment modeling studies. There are two manuscripts that relate directly to the growing epidemic of obesity. Drs. Grace, Goodbar and Foushee discuss the use of vancomycin in obese and morbidly obese patients. They indicate that maintenance doses above the standard 15-20 mg/Kg are needed in the majority of obese patients to achieve both a therapeutic vancomycin trough concentrations and appropriate AUC:MIC ratios. This paper also indicates that higher than “normal” loading doses of vancomycin are needed in obese patients. They recommend that clinicians should be aggressive with vancomycin therapy to ensure efficacy until therapy can be adjusted with vancomycin serum concentrations. The paper by Drs. Giuliano, Wilhelm and Kale-Pradhan discusses the changes in pharmacokinetics caused by Roux en Y gastric bypass surgery, a procedure increasingly used to manage obese subjects. This paper highlights absorption changes caused by this procedure and the need for more extensive studies evaluating the impact that Roux en Y surgery has on how drug therapy is used in these patients. Finally, the article by Dr. Edwards discusses how pharmacokinetic drug interactions can be used to enhance drug response. All too often drug interactions are thought of in a negative context. This paper provides an overview of the theoretical rationale for beneficial drug interactions providing specific examples of interactions that are currently being used clinically or actively undergoing research. Of interest is the discussion on drug combinations used to enhance delivery of drugs to targeted tissues. I do hope that readers appreciate the scope of this edition and how the papers complement one another with the goal of providing the reader some insight into a few of the recent advances seen in pharmacokinetics and pharmacodynamics.

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