Clinical Pharmacokinetics

Objectives:

This course is a continuation for the pharmacokinetic and biopharmaceutics course (PPH 421). It focuses on the application of the basic Principal of therapeutic drug monitoring using actual patient's drug pharmacokinetic parameters for optimizing the drug therapy. Emphasis on therapeutic drug monitoring for commonly prescribed drugs with narrow therapeutic index or serious toxicities

Contents:

Theoretical

This clinically advanced pharmacokinetics course focusing on, topics in daily issue such as effect of disease on drug and drug-drug interaction on pharmacokinetic parameters, appropriate loading and maintenance dose calculation, dosing adjustment for linear and non-linear drugs, effect of altered serum protein binding and hemodialysis on drugs, interpretation of serum drug concentration and drug assay validity. Drugs to be in focus include; aminoglycosides, vancomycin, lithium, valproic acid, digoxin, theophylline, phenytoin, methotrexate and carpamazepine.

Practical

Application of the basic principal of therapeutic drug monitoring using actual patient's drug pharmacokinetic parameters for optimizing the drug therapy. Emphasis on therapeutic drug monitoring for commonly prescribed drugs with narrow therapeutic index or serious toxicities.

Course Outcomes:

By the end of this course the student should be able to:

1. **Understand the importance of therapeutic drug monitoring (TDM) of several drugs including: Aminoglycosides, Vancomycin, Antiepileptic drugs(Phenytoin, Phenobarbital, Valproic acid & Carbamazepine); Digoxin, Theophylline, Cyclosporine-A, Methotrexate, and Acetaminophen.**
2. **He/She should be able to discuss the effect of several variables such as age, certain diseases, drug interactions, change in protein binding, renal impairment, liver cirrhosis, dialysis, both on the drug level and clinical response.**
3. **Students are expected to explain the basis for designing individualized optimal dosage regimen for each drug covered in this course in term of loading and maintenance doses.**

Principal Text:

- **Applied Biopharmaceutics and pharmacokinetic , Ed., Leon Shargel, Williams and Wilkins (Latest).**

Supplementary Text:

- **Basic clinical pharmacokinetics , Ed., M. Winter. Applied Therapeutics, Inc. (Latest)**