

A 3-DAY INTRODUCTORY WORKSHOP IN POPULATION PK DATA ANALYSIS

A HANDS-ON COURSE USING NONMEM®



Thursday, June 20 – Saturday, June 22, 2013
Niagara Falls, NY



WORKSHOP SYNOPSIS

This introductory population PK training workshop has been designed to provide the necessary information to successfully implement population pharmacokinetic methodology in a drug development program. The material is structured to impart both the theoretical and practical aspects of the population approach and is versatile so that participants with diverse backgrounds and areas of expertise may benefit. Examples of the use of population PK studies in drug development programs, especially those from the published scientific literature, will be presented whenever possible to provide specific details of various implementations and better illustrate essential aspects of population PK methods. Emphasis will be placed on compliance with the FDA's Guidance for Industry on Population PK and the EMEA's Guideline on Reporting the Results of Population PK Analyses; participants will gain an appreciation for the importance of protocol compliance, the essentials of accurate and sufficient data collection, and learn how to proactively plan in order to maximize study effectiveness.

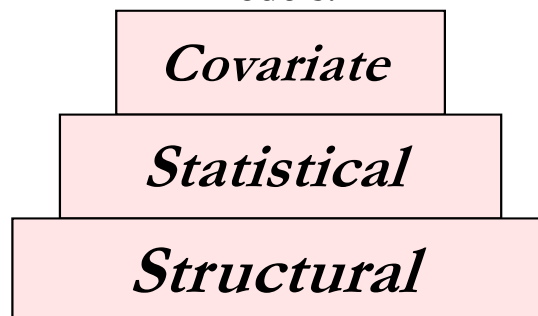
The workshop content is provided as a combination of formal lectures, review of data, code, and data analysis results, and hands-on exercises. Participants will use their own laptop computers, with which they will be able to practice coding control streams, running various models, and evaluating the results. A thorough examination of an example dataset, from development of the structural model, through covariate analysis, and model refinement will be covered. Overall, this workshop will provide the participants with a comprehensive understanding of the population PK approach to data analysis, its usefulness and added value in drug development, as well as when and where to employ population PK methods and sparse sampling within a given development program. The format is designed to be both comprehensive and interactive.

LEARNING OBJECTIVES

Following the workshop, the participant should be able to:

1. Understand the conceptual basis and rationale for the population approach to data analysis
2. Understand where and when population methods may be optimally applied to PK and PK/PD analyses during the drug development process
3. Understand and describe the potential benefits and advantages to implementing a population strategy
4. Identify the critical logistic and practical issues involved in study design, protocol development, case report form development, overall planning, and efficient execution for population PK studies
5. Describe the critical documentation standards for population PK reports intended for regulatory submission
6. Write, execute, and de-bug basic NONMEM® control streams for simple structural PK models
7. Outline the requirements and format for basic NONMEM® datasets
8. Understand, identify, and code basic functional forms for covariate-parameter relationships
9. Perform covariate analyses to evaluate determinants of PK variability
10. Understand the importance of exploratory data analysis (EDA) and the interpretation of standard goodness-of-fit diagnostic plots
11. Understand the basis for model selection strategies and discriminate between candidate models on the basis of both quantitative and qualitative factors
12. Understand and interpret NONMEM output, including error messages, and have insight into potential model refinement issues

Models:



COURSE INSTRUCTION

The workshop is organized and taught by experienced pharmacometricians from the University at Buffalo School of Pharmacy and Pharmaceutical Sciences and Cognigen Corporation, a pioneer and global leader in the field of pharmacokinetics and pharmacodynamics. Cognigen Corporation has been providing clinical pharmacology consulting services, including population PK/PD modeling and simulation to the global pharmaceutical industry for 20 years. Cognigen specializes in performing innovative data management and pharmacometric analyses to generate and communicate the knowledge required for time-sensitive decision-making and regulatory review. Course faculty will minimally include: Jill Fiedler-Kelly and David Jaworowicz.



Jill Fiedler-Kelly

This session is preceded by a 3-day separate course in the concepts and applications of Pharmacokinetic/Pharmacodynamic Modeling coordinated by Dr. William J. Jusko. For information see: <http://pharmsci.buffalo.edu/symposia/> or contact rrurben@buffalo.edu.

AGENDA

Thursday, June 20, 2013

08:35-08:40 **Welcome:** Dr. W. Jusko
08:40-08:45 **Introduction to the Workshop** (Fiedler-Kelly)
08:45-09:45 **The Population Approach in Drug Development** (Fiedler-Kelly)
09:45-10:20 **Population Modeling Basics** (Fiedler-Kelly)
10:20-10:40 Break
10:40-11:50 **NONMEM® Terminology** (Jaworowicz)
11:50-12:45 **Estimation Methods in NONMEM®** (Jaworowicz)
12:45-01:45 Lunch
01:45-03:15 **Brief Overview of the NONMEM® Program and Writing an NM-TRAN Control Stream** (Fiedler-Kelly)
03:15-03:35 Break
03:35-04:05 **NM-TRAN lecture (cont'd)** (Fiedler-Kelly)
04:05-05:20 **NONMEM® Dataset Structure** (Fiedler-Kelly)
05:20-05:30 **Exercise: Writing Control Streams and Diagnosing Dataset Problems**

Friday, June 21, 2013

08:30-09:15 **Review Control Stream and Dataset Exercise**
09:15-09:50 **Exploratory Data Analysis** (Fiedler-Kelly)
09:50-10:20 **Exercise: Introduction to kiwi**
10:20-10:40 Break
10:40-11:25 **Running NONMEM® and Interpreting the Output** (Fiedler-Kelly)
11:25-11:35 **Data Review: Introduction to the Example Dataset and Exploratory Data Analysis**
11:35-12:30 **Exercise: Developing a Base Structural Model**
12:30-01:30 Lunch
01:30-02:00 **Base Structural Model Exercise (cont'd)**

02:00-02:10 **Data Review: Base Model**
02:10-02:45 **Model Diagnostic Plots** (Jaworowicz)
02:45-03:05 Break
03:05-03:35 **Model Selection and Covariate Evaluation – Part 1: The Covariate Assessment Process** (Jaworowicz)
03:35-04:25 **Covariate Evaluation–Part 2: Functional Forms**
04:25-04:40 **Data Review: Introduction to Covariate Analysis and Coding Issues** (Jaworowicz)
04:40-05:30 **Exercise: Forward Selection of Covariate Effects**

Saturday, June 22, 2013

08:30 -09:00 **Forward Selection Exercise (cont'd)**
09:00-09:40 **Data Review: Forward Selection Results and Multivariable Model Checking**
09:40-10:20 **Exercise: Backward Elimination of Covariate Effects**
10:20-10:40 Break
10:40-11:20 **Backward Elimination Exercise (cont'd)**
11:20-12:00 **Applications of Bayesian Parameter Estimation** (Fiedler-Kelly)
12:00-01:00 Lunch
01:00-02:50 **Diagnosing Errors, Model Checking, Model Refinement, and Model Evaluation Techniques** (Fiedler-Kelly)
02:50-03:00 **Data Review: Backward Elimination and Model Refinement**
03:00-03:20 Break
03:20-03:40 **Pharmacometric Analysis Planning and Population PK/PD Modeling and Simulation Examples** (Fiedler-Kelly)
04:20-04:30 **Wrap-up and Final Q & A**

REGISTRATION DETAILS

Course location: The course will be held at The Conference Center Niagara Falls, 101 Old Falls Street, Niagara Falls, NY 14303. USA. Phone: (716) 278-2100. Fax: (716) 278-0008. The Conference Center is 28 min. from Buffalo International Airport. Website: <http://www.conferencecenterniagarafalls.com>

Fee: The fee is \$2400. A US government employee rate of \$1800 and student rate of \$1200 is available for up to 3 participants of each type. The registration fee includes hard-copy course documentation and USB drive with code examples. Lunches and break-time refreshments during the course are included.

Accommodations: *Sheraton at the Falls*, 300 Third Street, Niagara Falls, NY 14303. USA. Phone: (716) 285-3361. The price is \$109/night. *Hotel Deadline: May 12, 2013* Website: <http://sheratonatthefalls.com>

Requirements: Laptop computers required to fully participate in hands-on exercises. Minimum configuration required: Internet Explorer 7+, Firefox 3+, or Google Chrome; Flash 9+ plug-ins; Text editor.

Registration: Given the hands-on nature of the course, enrollment will be limited to 25 persons. Confirmation of registration will be returned upon receipt, together with an invoice for the course fee. Registration will not be final until payment is received. Checks should be made out to University at Buffalo Foundation Inc. Bank transfers and credit card payments also accepted.

Cancellations: Cancellations with a full refund may be made until April 24, 2013. No refunds will be given for cancellations received after this date. Substitutions may be made at any time.

REGISTRATION FORM: INTRODUCTORY NONMEM® WORKSHOP

Name: _____
Organization: _____
Address: _____
City: _____ State/Country: _____
Postal Code: _____
Telephone: _____ Fax: _____
E-mail: _____
For credit card payment:
Credit card number: _____
Signature: _____ Expiration Date: _____

Kindly return to: PK/PD MODELING – NONMEM Workshop, Dept. of Pharmaceutics, School of Pharmacy, University at Buffalo, 445 Kapoor Hall, Buffalo, NY 14214; phone: 716 645 4834; fax: 716 829 6569; e-mail Rita Urben at rrurben@buffalo.edu.