Research Applications of Healthcare Data: Principles and Practice

There has been a rapid increase in the availability of public and private biomedical data that has created novel opportunities for healthcare researchers. Several techniques are now available for accessing and querying healthcare data. However, most physicians do not have formal training or expertise in data science methodologies that are essential for accessing and analyzing biomedical data. Accomplishing these goals requires understanding data commonly encountered in medicine, healthcare data standards, and data science methods for manipulation and analysis.

This workshop is designed to provide participants with the knowledge and understanding to utilize healthcare data for developing and answering clinically relevant research questions. Through a project-based and didactic curriculum, trainees will gain hands-on experience with computational resources, learn privacy standards for protected health information and methods of securing biomedical data sets, understand how to use data standards and terminologies, and become familiar with foundational data science methodologies. Trainees, after obtaining approval to use the Medical Information Mart for Intensive Care (MIMIC) database, will be guided in the use of the R programming language to conduct basic clinical research analyses on this real-world dataset of 46,000 ICU patients. Participants will also be exposed to modern machine learning methods to create prediction models and in the "art" of incorporating these as clinical decision support systems (CDSS) into clinical workflows.

Learning Objectives:

- Learn methods of securing biomedical data sets and understand how to use data standards and terminologies,
- Become familiar with foundational data science methodologies
- Gain hands-on experience to create and analyze a cohort from biomedical data to answer a research question

Co-Chairs Ravindra L Mehta, MD and Michael Hogarth MD

Faculty: Michael Hogarth MD, Jejo Koola MD, Shamim Nemati PhD, Etienne Macedo MD, David Warnock MD

Wednesday Jan 15	Thursday Jan 16	Friday Jan 17
1:00-1:15 **Opening remarks** 1:15-2:00 **Where can you find data?** 2:00-2:45 **Intro to the computational environment** 2:45-3:30 **Structured vocabularies: how is health data organized?** 3:30-3:45 *Coffee Break* 3:45-4:15 **The electronic health record: data collected for healthcare** 4:15-5:00 **Privacy considerations and HIPAA regulations when dealing with healthcare data** 5:00-6:00 **Interactive lab querying healthcare data repositories (SLICER/DICER and ACT)** 6:00 pm **Adjourn**	8:00-8:45 am **How to create a cohort for analysis** 8:45-9:15 **Introduction to the MIMIC dataset** 9:15-10:00 **Intro to working with databases and SQL** 10:00-10:15 *Coffee Break* 10:15-12:00 **Interactive Lab using SQL to Query MIMIC data** 12:00-1:00 pm *Lunch* 1:00-2:00 **Statistical and analytical foundations of outcome analysis and predictive modeling** 2:00-3:00 **Risk prediction models: assessing calibration and discrimination** 3:00-3:15 *Coffee Break* 3:15-6:00 **Interactive Lab with MIMIC data for analysis** 6:00 pm **Adjourn**	8:00-9:00 am **Applied machine learning: supervised and unsupervised models** 9:00 -10:00 **Clinical decision support: how to use data to improve medical decisions** 10:00-10:15 *Coffee Break* 10:15-11:00 **AKI datasets and applications** 11:00-12:00 **Demo Lab for access to O'Brien Center Datasets** 12:00-12:30 **Q and A session** 12:30 **Adjourn**
	7:00PM **Dinner** *Hosted by Conference for Workshop Participants*	

Registration is limited to 10 participants. **REGISTRATION FEE: Academic Researchers $450 (USD)**
If you are interested please contact Ravindra Mehta (rmehta@ucsd.edu); and cc to Kelly Andringa (andringa@uab.edu). For more detailed information on the program please visit our website https://www.uab.edu/medicine/obriencenter/education/. Participants will be responsible for their own travel and housing arrangements

Registration

The workshop is being held at the UCSD Altman Clinical and Translational Research Institute

Registration Deadline: December 13, 2019

Course Fees: $450 academic researchers (contact andringa@uab.edu for other registrant fees)

The registration includes course materials, lunches, coffee breaks, dinner on Jan16.

Name	
Institution	
Department	
Address	
Mobile Phone	
Email	
Position	

Please submit registration information, your biosketch or CV and a brief paragraph on how this course will assist your research trajectory by email to:

Kelly Andringa, PhD
O'Brien Administrative Director
e-mail: andringa@uab.edu
P: 205.975.4812

Dr. Andringa will communicate the details of remitting payment, which is required to reserve a place in the course.