

# Data Studio

1:00–2:30pm, Wednesday, 14 April 2021

Videoconference:

<https://stanford.zoom.us/j/94176271679?pwd=UHRjdENYU1I1NXZTbHJXNXFLWjB1UT09>

Password: 423149

## Title: Data Studio Workshop Double-Header

### Summary:

The Data Studio Workshop brings together a biomedical investigator with a group of experts for an in-depth session to solicit advice about statistical and study design issues that arise while planning or conducting a research project. This week, the investigator(s) will discuss the following projects with the group.

### Predictive Value of NT-pro-BNP as a Biomarker for the Severity and Survival from COVID-19 in a Nationwide Hospitalized Cohort

1:00–2:00 PM

**Investigator:** Christian O'Donnell Anesthesiology

**Investigator:** Melanie D. Ashland Stanford Cancer Institute

**Investigator:** Connor O'Brien Cardiovascular Medicine, UCSF

**Investigator:** Elena Vasti Anesthesiology

COVID-19 has transformed our world and presented one of the largest medical challenges of our generation to characterize, prognosticate, and treat. Older patients and those with risk factors for cardiovascular (CV) disease such as obesity, hypertension (HTN), diabetes (DM), and coronary artery disease (CAD) experience worse outcomes. Cardiac injury as measured by elevations in troponin and brain natriuretic peptides (BNP) such as the N-terminal proBNP (NT-proBNP), are associated with a higher risk of mortality in patients hospitalized with COVID-19. NT-proBNP is an established biomarker for diagnosing and monitoring heart failure, ischemic heart disease, and myocardial injury. NT-proBNP also carries prognostic value in lung diseases where elevations have shown to predict cardiopulmonary death and risk of exacerbations in patients with chronic obstructive pulmonary disease (COPD) without a history of HF. However, NT-proBNP is not always routinely checked in clinical practice for admissions related to COVID-19. There is limited literature on the use of NT-proBNP for predicting clinical outcomes in COVID-19. We theorize that COVID-19-related lung injury may be causing *cor-pulmonale* to elevate NT-proBNP levels, which may carry predictive value. Our goal is to better define the relationship between NT-proBNP and clinical outcomes in hospitalized patients, to assess the predictive value of NT-proBNP as a biomarker for the severity and survival from COVID-19.

### Questions:

1. Are there strategies for ROC curves and/or modeling that don't limit data to complete case analysis (a.k.a. omitting missing data) and don't require imputation?
2. Even though our quintiles split looks good in the analysis, is there any thought to looking at weighting quintiles? Propensity weighting?

3. How to translate threshold values into quantitative NT-proBNP?
4. Do you agree with the multilinear model with all biomarkers included using discrete cutoffs for elevated? Or are there other strategies for such as log transformation which could normalize elevations in continuous variables that have greatly different scales of elevation?

## **Clinical Differentiation of Corneal Ulcers and Scars: A Photographic Survey**

**2:00–2:30 PM**

**Investigator: Bethlehem Mekonnen** Ophthalmology

**Investigator: Charles Lin** Ophthalmology

Among corneal diseases, microbial keratitis is the most common cause of corneal blindness and one of the true ocular emergencies leading to vision loss within hours if left untreated. An approach to diagnose and guide management of corneal ulcers remotely could make a significant impact in vision outcomes, especially for patients with limited access to eye care. We aim to evaluate the diagnostic accuracy and reliability of ophthalmologists of various sub-specialties and training levels to detect the activity of corneal ulcers using slit-lamp photographs.

### **Questions:**

1. Given 4 participant groups, what should be the sample size of graders for each group?
2. Any statistical consideration when it comes to the number of photographs the graders should review?
3. What is the best way to calculate the accuracy and precision of each group to distinguish between active corneal infection and scar?

## Zoom Meeting Information

Join from PC, Mac, Linux, iOS or Android:

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**For more information about Data Studio:**

<http://med.stanford.edu/dbds/resources/data-studio.html>