McGill | Department of Epidemiology, Biostatistics and Occupational Health

Biostatistics Seminars

Fall 2019

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Error-Prone Failure Time Data in Electronic Health Records (EHR) Data: Methods for Analysis and Study Design

Wednesday, October 16, 2019
3:30 pm – 4:30 pm – Purvis Hall, 1020 Pine Ave. West, Room 24
All are Welcome

Abstract: There is increasing interest in using administrative electronic health record (EHR) data as a cost-effective resource to support medical research. Real-world observational cohort and EHR data demonstrate the presence of measurement errors in event times, event classification, and exposures, with strong correlation in some settings between the magnitude of errors in these variables. These correlated errors can bias estimation and lead to misleading study results. Measurement error can also dramatically reduce power to detect the target associations. In this seminar, the effects of measurement error in outcome and covariates will be examined in detail, with a focus on the analysis of time to event outcomes. Novel methods to address measurement error in failure time outcomes will be presented. Validation studies, where records on a subset of individuals are more carefully studied to understand the structure of the measurement error in the study data, are generally necessary to apply these statistical methods. Aspects validation study design that can improve the precision of the bias-corrected study results will be discussed.

Bio: Pamela Shaw is an Associate Professor of Biostatistics at the University of Pennsylvania Perelman School of Medicine (Department of Biostatistics, Epidemiology and Informatics). Dr. Shaw's statistical research interests include methodology to address covariate and outcome measurement error, survival analysis, clinical trial design. She has a particular interest in behavioral intervention studies and the use of biomarker studies to calibrate self-reported nutritional intake and physical-activity. Her methodological interests also include a focus on how to improve statistical inference by better tailoring the statistical test to the scientific question of interest. She recently co-authored the textbook Essentials of Probability Theory for Statisticians (CRC Press 2016). https://www.dbei.med.upenn.edu/bio/pamela-ann-shaw-phd

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