Workshop: Statistical Challenges and Opportunities in HIV/AIDS Research in the Era of Getting-to-Zero HIV Infections

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"Errors in multiple variables in HIV cohort and electronic health record data: statistical challenges and opportunities."

Abstract:

Observational data derived from patient medical charts and electronic health records are increasingly used for HIV/AIDS research. There are challenges (some recognized, some unrecognized, and some recognized but ignored) to using these data, in particular with regards to data quality. There are great opportunities for the statistical community to improve inference by incorporating validation subsampling into analyses of EHR data. Methods to address measurement error, misclassification, and missing data are relevant, as are sampling designs such as two-phase sampling. However, many of the existing statistical methods for measurement error, for example, only address relatively simple settings, whereas the errors seen in these datasets span multiple variables (both predictors and outcomes), are correlated, and even affect who is included in the study. I will discuss some preliminary methods in this area and outline areas of future research, providing examples and illustrations with real HIV data throughout.

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Dr. Shepherd is a Professor and Vice Chair of Research, Biostatistics Department, Vanderbilt University School of Medicine. Dr. Shepherd has been involved in studies of HIV/AIDS since 2000, including observational studies, laboratory experiments, and randomized clinical trials. Dr. Shepherd directs the Biostatistics and Biomedical Informatics Core of the Tennessee Center for AIDS Research, supervises statistical support for the Vanderbilt Institute for Global Health, and is the lead statistician for the Caribbean, Central and South American network for HIV Research (CCASAnet) of the International Epidemiologic Databases to Evaluate AIDS (IeDEA). Dr. Shepherd's statistical research has been motivated by his collaborative HIV work, with a focus on methods for causal inference, ordinal data analysis, and addressing measurement error.