

Seminar: April 18, 2022

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Title: Using Electronic Health Records for Scientific Research: Promises and Perils

Abstract: Electronic Health Records (EHR) linked with other auxiliary data sources hold tremendous potential for conducting real-time actionable research. However, one has to answer two fundamental questions before conducting inference: "Who is in my study?" and "What is the target population of Inference?". Without accounting for selection bias one can quickly produce fast but inaccurate conclusions. In this lecture, I will discuss a statistical framework for jointly considering selection bias and phenotype misclassification in EHR analyses. I will discuss large-scale association studies across multiple phenotypes, namely Phenome-wide association studies (PheWAS) that have gained traction in the genetics and medical informatics world. I will present several applications in cancer research and for identifying risk factors for COVID-19 hospitalization and mortality using EHR data. This is joint work with Lars Fritsche, Lauren Beesley and Maxwell Salvatore, and many others at the University of Michigan School of Public Health.