DREXEL UNIVERSITY
School of
Public Health

Department of Epidemiology and Biostatistics Seminar Series

Assessing incremental values of biomarkers in cohort studies

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Date:

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12:00 pm –1:00 pm

Location:

Nesbitt Hall 719
3215 Market Street
Philadelphia, PA 19104

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Lunch will be served.

Comprehensive risk prediction models are critical to identifying populations at different levels of risks that should be recommended for preventive or treatment strategies that vary in intensity. As more putative biomarkers or genetic markers become available to assist in risk prediction, it is important to quantify their incremental values (IncV) in improving existing risk models because of the potential cost associated with measuring these markers. However, practical complications and challenges are often involved in biomarker evaluation.

In this talk, I will focus on two different issues. One is that many promising biomarkers, while strongly associated with clinical outcomes, may show limited capacity in improving risk prediction over and above routine clinical variables at the population-average level since the IncV of these biomarkers often vary across subgroups. We have proposed a novel statistical procedure for systematically identifying potential subgroups in whom it might be beneficial to measure both the new biomarkers and traditional markers. In the second part of my talk, I will focus on complications resulting from sampling designs in cohort studies. Due to high measurement cost and limited availability of biospecimens, it is often not feasible to obtain biomarkers values for the full cohort. Thus, biomarker evaluation often replies on nested case control (NCC) studies with several stages of data collection. Furthermore, as scientific hypotheses update over time, multiple NCC studies might be conducted sequentially to address evolving questions.

Michelle Zhou received her M.Sc. from the University of Waterloo, Canada and a Ph.D. from the University of Waterloo in 2009. Afterwards, she was a Postdoctoral Fellow at Harvard School of Public Health working with Dr. Tianxi Cai and Dr. Xihong Lin until June 2012. Currently, Dr. Zhou is an assistant professor in the Department of Statistics and Actuarial Science at Simon Fraser University, Canada. Her research focuses on model diagnosis, model selection, survival analysis, longitudinal data analysis, risk prediction, biomarker evaluation, and personalized medicine.