

# BIostatISTICS SEMINAR

## **The Stratified Micro-randomized Trial Design: Sample Size Considerations for Testing Nested Causal Effects of Time-varying Treatment**

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**Abstract:** Technological advancements in the field of mobile devices and wearable sensors have helped overcome obstacles in the delivery of care, making it possible to deliver behavioral treatments anytime and anywhere. Delivery of these treatments is increasingly triggered by detections/predictions of vulnerability and receptivity, which may have been impacted by prior treatments. Furthermore the treatments are often designed to have an impact on users over a span of time during which subsequent treatments may be provided. In this talk, I will discuss the design of a mobile health smoking cessation intervention study with the goal of assessing whether reminders, delivered at times of stress, result in a reduction/prevention of stress in the near-term, and whether this effect changes with time in study. Multiple statistical challenges arose in this effort, leading to the development of the "stratified micro-randomized trial" design. In these designs, each individual is randomized to treatment repeatedly at times determined by predictions of risk. These "risk" times may be impacted by prior treatment. I will describe the statistical challenges and detail how they can be met.

Johns Hopkins Bloomberg School of Public Health, Department of Biostatistics  
Monday, December 10 2018, 12:15:1-15  
Room W2008 (Refreshments 12:00pm)

**Note: Taking photos during the seminar is prohibited**

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