# Yale SCHOOL OF MEDICINE

Yale Center for Implementation Science (YCIS)
&
Center for Methods in Implementation and Prevention Science (CMIPS)

## Using Data to Inform Just-in-Time Adaptive Intervention Development in Digital Health

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Science
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Monday, December 2, 2019
12:00 – 1:00 p.m.
Hope Building, JEH H110 lecture hall
Lunch will be served after the presentation.

Mobile devices, along with wearable sensors, facilitate our ability to deliver supportive behavioral treatments to users anytime and anywhere. Indeed, mobile interventions are being developed and employed across a variety of health fields, including to support HIV medication adherence, encourage physical activity and healthier eating as well as to support recovery in addictions. A critical question in the optimization of mobile health interventions is: "When, and in which contexts, is it most useful to deliver treatments to the user?" This question is critical in forming the development of interventions that are adaptive to individuals as well as providing support just-in-time. In this talk we discuss our work on a variety of mobile health interventions and how data analysis methods can be harnessed to optimize JITAIs.

**Dr. Susan Murphy's** current research interests are clinical trial design and the development of data analytic methods for informing multi-stage decision making in health. In particular her work focuses on (1) constructing individualized sequences of treatments (a.k.a., adaptive interventions) for use in informing clinical decision making and (2) constructing real time individualized sequences of treatments (a.k.a., Just-in-Time Adaptive Interventions) delivered by mobile devices. Adaptive Interventions are composed of a sequence of decision rules that specify when to alter the therapy and specify which intensity or type of subsequent therapy should be offered. The decision rules employ variables such as patient response, risk, burden, adherence, and preference, collected during prior therapy. These regimes hold the promise of maximizing treatment efficacy by avoiding ill effects due to over-treatment and by providing increased treatment levels to those who can benefit.

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