

**Department of Epidemiology and Biostatistics
Biostatistics Seminar**

Thursday, January 23, 2014
12 -1pm -- WG73
Bring your own lunch

**“Joint Modeling of Longitudinal and Time-to-event Data
with Application to a Longitudinal Clinical Trial of Patients with Renal Disease”**

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Abstract: In many longitudinal studies, interest is in estimating and comparing trends or rates of change in a continuous outcome measure Y obtained serially over time. When dropout from the study occurs, where the probability of dropout or time-to-dropout are related to unmeasured elements of the continuous outcome such as random intercepts or slopes in a mixed model for Y , dropout is termed nonignorable (also called informative censoring). When nonignorable dropout is present, standard longitudinal analysis techniques that ignore information on dropout such as use of mixed models or generalized estimating equations can result in biased estimates, and specialized methods for joint modeling the longitudinal outcome as well as time-to-dropout are required. This talk will illustrate several general joint-modeling approaches that can be taken when modeling this type of data: 1) generalized pattern mixture models, 2) selection models, and 3) shared parameter models. The methods will be illustrated using data from the Modification of Diet in Renal Disease (MDRD) study, a longitudinal randomized clinical trial of patients with progressive renal disease. Here the continuous outcome is glomerular filtration rate (GFR) measured serially over the follow-up period and the time-to-event outcome is study dropout due to occurrence of end stage renal disease or death.