

**Department of Epidemiology and Biostatistics
Biostatistics Seminar**

Thursday, February 13, 2014
12 noon -1:00 pm -- WG73
Bring your own lunch

**“Frailty models for pneumonia-to-death
with a left-censored covariate”**

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Abstract: Frailty models are multiplicative hazard models for studying association between survival time and important clinical covariates. When some values of a clinical covariate are unobserved but known to be below a threshold, called the limit of detection (LOD), naive approaches ignoring this problem, such as replacing the undetected value by the LOD or half of the LOD, often produce bias and inefficient parameter estimates. To address the LOD problem in a frailty model, we propose a smooth nonparametric density estimator along with Simpson's numerical integration technique in a likelihood framework for the estimation and inference of the model parameters. Simulation studies are conducted to evaluate the performance of the new method in realistic scenarios. We illustrate the use of the proposed method with a data set from Genetic and Inflammatory Marker of Sepsis Study in which Interleukin-6 was subject to LOD.