

1163-37-1311      **Katharine Gurski** and **Kathleen A Hoffman\*** (khoffman@umbc.edu), 1000 Hilltop Circle,  
Baltimore, MD 21250. *An HIV Model with Longterm Partnerships and Disease  
Progression*. Preliminary report.

The dynamics of HIV infections depends on many factors such as sexual behavior, mixing strategies, cultural norms, stages of disease progression, treatment options, and longterm and casual partnerships. In this talk, I will focus on including longterm partnerships into a model of HIV that incorporates a non-constant population, multiple sexual behaviors, and three stages of disease progression: acute, chronic, and virally suppressed. Incorporating longterm partnerships requires a model that accounts for the impact of an infected individual on subsequent partnerships which is mathematically represented by a nonlocal term in the model. The nonlocal term takes the form of an expected value, which we then linearize to a more tractable form. We develop the model to study the effect of intervention strategies that minimize the amount of disease in the population and the reproductive number of HIV. (Received September 15, 2020)