

**JOINT RATE MODELS FOR RECURRENT EVENT AND EVENT MARKER DATA**

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In many biomedical studies with recurrent event, some markers can only be measured when the event happens. For example, in a study for hospitalization, medical cost can only incur when the patient is hospitalized. It is of interest to study the effect of some risk factors on both rate of hospitalization and the cost associated with the hospitalization. In this talk, we present a simultaneous modelling of both recurrent event and the event marker using the observed covariates. The relationships between covariates and recurrent event and event marker are modelled through general link functions. Estimating equations are constructed to derive the point estimates for the parameters in the proposed model. The asymptotic properties are established for our proposed estimators. We further propose some goodness-of-fit test statistics for selecting the link functions. Finally, simulation studies are conducted to examine the finite-sample properties of the proposed estimators and the proposed method is applied to a data set from a diarrheal study to illustrate our approach.