

Abstract. In many medical conditions subjects can experience recurrent incidents. A common feature for the recurrent events data and multi-stage failure time observations is that the events are naturally ordered and occur in a certain sequence over time. To analyze such data, conventional methods based on either the frequency of events or the time to the first event or overall survival time is often inefficient and unsophisticated. If data have repeated events over a period with censored failure time in longitudinal studies, more complex analytic approaches are needed to obtain accurate estimates and efficient inferences, because adjustment is necessary for existing correlation between recurrent failure times within a subject. For analyzing different kinds of recurrent event data we review the existing models multiple failure time models and frailty models, which allow use of all the available information to accurately estimate the relative risks of recurrences in a given dataset. Using the data of bleeding events in the Eltrombopag study, the results from the proposed models are compared, and applicability and appropriateness of each model are discussed.