THE EFFECT OF FOLLOW-UP FREQUENCY IN DATA WITH INFORMATIVE DROPOUT

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Random effects selection models form one class of joint models. Marker development is described by a random effects model, and the event time is related to the marker process via the individual random effects. Our study was motivated by data from an HIV/AIDS cohort study. A bivariate random effects model was used to describe development of CD4 T-cell count and HIV-1 RNA level. Fitted values were included as time-varying covariates in a Cox proportional hazards model. Individuals were scheduled to return every four months, but could be lost to follow-up before the event occurred. Their random effects estimates were used to extrapolate marker values to their event (or censoring) time. Results from this joint model were compared with results from a separate random effects model without survival component. The separate model only gave a minor bias in the estimates of the population parameters. Random effects estimates only differed for persons with incomplete follow-up. Bias of the separate random effects model was further investigated in a simulation study, in which data on CD4 development and AIDS progression were generated. Bias increased with decreasing frequency of visits, but if there was an extra measurement at the event or censoring time, results were almost as good with a frequency of once every four years as with a once every four months frequency. Hence, to reduce effects of informative dropout, good follow-up is more important than high frequency of visits.