BAYESIAN SURVIVAL MODELING OF THE TIME-DEPENDENT EFFECT OF A TIME-DEPENDENT COVARIATE

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Patients undergoing organ transplantation are often administered drugs that suppress their autoimmune system, to avoid rejection of the new organ. A consequence of this is that risk of a variety of conditions is elevated until the drugs are eliminated. In this research we seek to characterize risk of post-transplant lymphoma among kidney transplant recipients. Of key interest is the possibly time-vary effect of a time-dependent covariate: transplant status while on the waiting list. As such there are two time scales that must be considered in the model; waiting-list time and post-transplant time. Using a Bayesian hierarchical model for the hazard function, both time scales are incorporated via conditionally independent stochastic processes. Smoothing of each process is specified using conditional Gaussian autoregressions. Features of the resulting posterior distribution are evaluated from draws obtain via the Metropolis-Hastings-Green algorithm.