

University of California, Irvine
Foundations of Statistics Seminar Series

*Designing and monitoring clinical trials with survival endpoints:
statistical issues, proposals, and opportunities*

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Monday, October 24, 2011
4:00 – 5:00 PM
Donald Bren Hall - Room 2011
(Bldg. #314 on campus map)

Researchers frequently elect to evaluate new therapies on the basis of patient survival. For example, clinicians might consider five-year survival when investigating drugs developed for use in childhood cancer, or 28-day survival when investigating the treatment of sepsis in patients suffering traumatic injury. Both of these examples focus on patient responses over a fixed period of time. However, for ethical reasons it is common for data to be periodically analyzed for early indications of efficacy, futility, or harm. In the case of censored survival data, inference is typically based upon a semiparametric model assuming a time-invariant treatment effect and standard group sequential methodology is used to generate multiple criteria for guiding the decision of whether a trial should be stopped early given the observed data. However, it is often the case that a given treatment might have a delayed effect within individuals or that the effect of treatment might dissipate over time. Special issues arise in such settings, mostly due to the dependence of results on the censoring distribution observed in the trial. In this talk, we discuss general issues associated with the sequential testing of a survival endpoint. Specific attention is given to the uncertainty of future observations under a potentially time-varying treatment effect. In this case we propose a method of imputation of future treatment effects based on random walks, which assumes minimally informative Bayesian prior distributions on the smoothness of survival of each comparison group. Imputation of future survival differences is carried out using standard Bayesian predictive distributions, thereby allowing for quantification of uncertainty in future treatment differences. The talk will conclude with a discussion of open problems in the area and avenues for future research.

For directions please refer to <http://www.ics.uci.edu/about/visit/>
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