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Generalized Likelihood Ratio Statistics an Uncertainty Adjustments in Efficient Adaptive Design of Clinical Trials

Jay Bartroff, Tze Leung Lai

(Submitted on 24 May 2011)

A new approach to adaptive design of clinical trials is proposed in a general multiparameter exponential family setting, based on generalized likelihood ratio statistics and optimal sequential testing theory. These designs are easy to implement, maintain the prescribed Type I error probability, and are asymptotically efficient. Practical issues involved in clinical trials allowing midcourse adaptation and the large literature on this subject are discussed, and comparisons between the proposed and existing designs are presented in extensive simulation studies of their finite-sample performance, measured in terms of the expected sample size and power functions.

Subjects: Statistics Theory (math.ST); Methodology (stat.ME) MSC classes: 62L10, 62F03, 62P10 Cite as: arXiv:1105.4667 [math.ST] (or arXiv:1105.4667v1 [math.ST] for this version)

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