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Methods for conducting sensitivity analysis of trials with potentially nonignorable competing causes of censoring. (English) Zbl 1209.62251
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Summary: We consider inference for the treatment-arm mean difference of an outcome that would have been measured at the end of a randomized follow-up study if, during the course of the study, patients had not initiated a nonrandomized therapy or dropped out. We argue that the treatment-arm mean difference is not identified unless unverifiable assumptions are made. We describe identifying assumptions that are tantamount to postulating relationships between the components of a pattern-mixture model but that can also be interpreted as imposing restrictions on the cause-specific censoring probabilities of a selection model. We then argue that, although sufficient for identification, these assumptions are insufficient for inference due to the curse of dimensionality. We propose reducing dimensionality by specifying semiparametric cause-specific selection models. These models are useful for conducting a sensitivity analysis to examine how inference for the treatment-arm mean difference changes as one varies the magnitude of the cause-specific selection bias over a plausible range. We provide methodology for conducting such sensitivity analysis and illustrate our methods with an analysis of data from the AIDS Clinical Trial Group (ACTG) study 002.

MSC:
62P10 Applications of statistics to biology and medical sciences; meta analysis
62N01 Censored data models

Keywords:
attrition; augmented inverse probability of censoring weighted estimation; curse of dimensionality; longitudinal data; noncompliance; pattern-mixture models; selection bias; selection models

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References:

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