

Discussion of “Dynamic treatment regimes: Technical challenges and applications”*

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We thank the editor for organizing this discussion of the article by Laber et al. (2014) (throughout referred to as LLQPM). The authors offer an elegant solution to the inferential problem caused by nonregularity. Our discussion will to a large extent focus on conceptual rather than technical issues, in part because the authors handled the technical matters so decisively and well. In so doing, we recognize that discussion of conceptual issues was not the authors’ goal and that the authors have written elsewhere about many of the issues we raise. Indeed, in our own writing, we have often either ignored the issues we raise or were unable to offer coherent solutions to them. We hope our discussion makes for an interesting and lively interchange.

We first address the following conceptual issue. The author’s target of inference is the stage one nonregular parameter β_{11}^* that determines the optimal treatment strategy π_1^{dp} at stage one of their two-stage trial. Robins (2004, Sec. 5) first recognized that β_{11}^* was nonregular and offered a method for obtaining a valid (necessarily conservative) confidence interval. However, in that section, Robins also noted that β_{11}^* only determines the optimal treatment decision at stage one for patients who will follow the optimal strategy at stage two; hence, because of uncertainty, it is not possible to know that the optimal strategy π_2^{dp} will in fact be followed at time two (even when we assume all the uncertainty is attributable to sampling variability), and therefore it is unclear that β_{11}^* should

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