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

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1. Introduction

We congratulate Drs. Laber, Lizotte, Qian, Pelham and Murphy on an outstanding review of dynamic treatment regimes (DTRs) [4]. This group has done pioneering work in advancing the theory and applications of DTRs. In a DTR, the treatment type and level are repeatedly adjusted according to an individual’s need. An important part of designing DTRs is to choose tailoring variables. A tailoring variable is a variable that is used to decide how to adjust the treatment. Laber et al. say that the current state of the art for choosing tailoring variable is to construct low-dimensional summaries of information that is available at the time of treatment on a subject’s status, where the summaries are motivated by clinical judgment, exploratory analyses and convenience. Laber et al. state that an important open problem is the development of formal feature extraction and construction techniques for choosing tailoring variables for DTRs. In this discussion, we discuss a method for choosing tailoring variables when the data available is a simple randomized clinical trial in which the treatment regimes after the initial randomization are set by protocol. This includes trials in which the treatment regime is changed over time based on a patient’s status in a set way specified by the protocol. In such trials, at a given time past the initial treatment assignment, there is no variation in how a patient is treated at that time given a patient’s status and past treatment history, i.e., every patient who has the same status and treatment history at time t past initial treatment assignment receives the treatment at time t that is specified

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