1154-62-1030 **Menggang Yu*** (meyu@biostat.wisc.edu) and **Rui Chen**. *Tailored Optimal Post-Treatment Surveillance for Cancer Recurrence.*

A substantial rise in the number of cancer survivors has led to urgent management questions regarding effective post-treatment surveillance strategies for cancer recurrence. Current surveillance guidelines provided by a number of professional societies all warn against overly aggressive surveillance, especially for low risk patients, but all fail to provide more specific directions to accommodate underlying heterogeneity of cancer recurrence. Therefore it is imperative to develop data-driven strategies that can tailor the surveillance schedules to recurrence risk in this era of stricter insurance regulations, provider shortages, and rising costs of health care. Due to a lack of statistical methods for optimizing surveillance scheduling in presence of competing risks, we propose a general approach that uses an intuitive loss function and dynamic programming for optimization of early detection of recurrence before death. The proposed strategies can tailor to patient risks of recurrence, in terms of both intensity and amount of surveillance. Using general three-state Markov models, our method is flexible and includes earlier works as special cases. We illustrate our method in both simulation studies and an application to breast cancer surveillance. (Received September 12, 2019)