Monitoring with Repeatedly Measured Marker:
Assessing Incremental Value of Additional Measurements

Wednesday, March 11, 2020
3:30 pm – 4:30 pm – Purvis Hall, 1020 Pine Ave. West, Room 24
All are Welcome

Abstract:
In many clinical settings, marker measurements are collected repeatedly over time according to a fixed schedule in hopes that the repeated measurements will provide additional prognostic information over and above a single or baseline measurement. Within a monitoring framework, our interest is in assessing the incremental value of repeated marker measurement over and above a baseline or a less frequently measured marker for predicting time to a terminal outcome of interest. We propose a new measure of time-dependent prediction accuracy called Overall Detection Rate (ODR) and use the ODR curve to assess incremental value of additional marker measurements. ODR is defined as the average sensitivity of a marker over the follow-up and a fixed False Positive threshold during the follow-up. We propose an intuitive non-parametric estimator of ODR and show how ODR can be used to assess incremental value of additional marker measurement. The properties of the estimator of ODR is studied via extensive simulation studies. We demonstrate the practical use of ODR for comparing marker measurement schedules using data from a study of transplant patients and cancer clinical trial.

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