ACO Data Impact on Readmission Model

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**Executive Summary**

## R3M Model Inputs

The current version of the R3M predictive modeling application was placed into service on May 17th 2016 and is being used by Locus Health© to prioritize their engagement focus on those ACO patients, discharged to home, that are most likely to be readmitted with 30 days of their discharge. A technical description of the model was published in 2015 [1]. During a silent test phase in early 2016 using actual patient admissions and discharges in near real time, performance of the application was determined to be greater than 72% in terms of the percentage of actual 30 day readmissions that were detected, prior to readmission when only the top 14% (this is the prevalence rate) of the rank order list is observed. When the top 28% of the ranked list are observed, fully 88% of actual readmissions are detected.

This level of accuracy far exceeds that found in previous studies[2]. This increased accuracy can be attributed to several important factors; 1) the form of the statistical learning model, a random survival forest, is much more sophisticated that the logistic regression models previously used, 2) the targeted outcome is a hazard function rather than the simpler categorical outcome models found in other applications 3) the combination of CMS claims data with information on the current patient episode based on data in the EMR system.