**eAppendix.** Model Validation and Machine Learning Exploratory Analysis

Using the testing/validation sample, for each outcome measure, we used the following items for model validation and selection: correlation coefficient of actual versus predicted outcomes for the entire sample, and goodness of fit plots (actual vs predicted outcomes, by predicted rank cohorts). We computed a C-statistic for the logit transformation models. Actual outcome to predicted outcome ratios were computed for each regression model by age range, geographic region, sex and MA enrollment to ensure that the model selected was not materially biased towards certain subsets of the population. Actual to predicted ratios close to 1.0 for all splits within a category reflect an unbiased model.

Variable selection was validated using machine learning techniques. Machine learning techniques for making predictions included, but were not limited to, neural networks, random forest, logistic regression, classification and regression trees, and gradient boosting. We also explored ensemble methods. The goal was to determine the most salient predictors of the outcomes of interest. The machine learning models were trained on the 80% training sample used in the regression modeling and included the same candidate variables for model inclusion. Predictions for each outcome were made for the full TM study population by changing TM enrollment status to MA, leaving all else constant.

An exploration of these findings, using feature impact analysis for the machine learning models, showed that SNF LOS was the most important variable in making predictions for hospitalization during the 180 days following SNF discharge, successful community discharge, and proportion of days at home. The most important variable in making predictions for total allowed medical costs during the 180-day post-index period was total allowed medical cost in the 180-day pre-index period, with SNF LOS being the second most important predictor.

The adjusted outcomes from the machine learning models were used to sensitivity test and validate the adjusted outcomes from the regression models developed in SAS. The machine learning results showed slightly less favorable outcomes for MA patients for the hospitalization during the 180 days following SNF discharge, proportion of days at home and total allowed medical costs during the 180-day post-index period outcomes compared to the results from regression modeling, and show MA is associated with a decrease in successful community discharge as opposed to an increase. These results allow us to solidify our findings that MA is
associated with favorable outcomes for three of our outcome measures, and suggests that the finding that MA enrollment increase successful discharge may be sensitive to the choice of modeling approach.
**eAppendix Table.** Distribution of Study Participant Characteristics with and Without Inverse Probability of Treatment Weighting

<table>
<thead>
<tr>
<th>Patient Characteristic</th>
<th>Without IPTW</th>
<th>With IPTW</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MA</td>
<td>TM</td>
</tr>
<tr>
<td><strong>Age in Years, mean</strong></td>
<td>76.5</td>
<td>79.8</td>
</tr>
<tr>
<td><strong>Age Category, (%)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-55</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>56-64</td>
<td>9%</td>
<td>5%</td>
</tr>
<tr>
<td>65-74</td>
<td>30%</td>
<td>21%</td>
</tr>
<tr>
<td>75-84</td>
<td>36%</td>
<td>34%</td>
</tr>
<tr>
<td>85+</td>
<td>22%</td>
<td>37%</td>
</tr>
<tr>
<td><strong>Female Sex, %</strong></td>
<td>61%</td>
<td>65%</td>
</tr>
<tr>
<td><strong>Race (%)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>87%</td>
<td>88%</td>
</tr>
<tr>
<td>Black</td>
<td>11%</td>
<td>8%</td>
</tr>
<tr>
<td>Other</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Geographic Region, %</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>3%</td>
<td>26%</td>
</tr>
<tr>
<td>Midwest</td>
<td>29%</td>
<td>25%</td>
</tr>
<tr>
<td>South</td>
<td>61%</td>
<td>35%</td>
</tr>
<tr>
<td>West</td>
<td>7%</td>
<td>14%</td>
</tr>
<tr>
<td><strong>Disability Status, %</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29%</td>
<td>20%</td>
<td>0.196</td>
</tr>
<tr>
<td><strong>Dual Eligibility for Medicare and Medicaid Enrollment, %</strong></td>
<td>16%</td>
<td>23%</td>
</tr>
<tr>
<td><strong>Elixhauser Comorbidity Index (ECI) Component, %</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHF</td>
<td>16%</td>
<td>18%</td>
</tr>
<tr>
<td>Cardiac Arrhythmia</td>
<td>21%</td>
<td>25%</td>
</tr>
<tr>
<td>Valvular Disease</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td>Pulmonary/Circulatory Disorder</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>PVD</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>HTN Uncomplicated</td>
<td>55%</td>
<td>57%</td>
</tr>
<tr>
<td>HTN Complicated</td>
<td>8%</td>
<td>9%</td>
</tr>
<tr>
<td>Paralysis</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Other Neurological Disorder</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>COPD</td>
<td>21%</td>
<td>21%</td>
</tr>
<tr>
<td>DM Uncomplicated</td>
<td>27%</td>
<td>27%</td>
</tr>
<tr>
<td>DM Complicated</td>
<td>13%</td>
<td>12%</td>
</tr>
<tr>
<td>Hypothyroidism</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>Renal Failure</td>
<td>12%</td>
<td>13%</td>
</tr>
<tr>
<td>Liver Failure</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Peptic ulcer disease without bleeding</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Condition</td>
<td>RA</td>
<td>TM</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Metastatic Cancer</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Solid Tumor No Metastasis</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>RA Collagen Disease</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>Coagulopathy</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Obesity</td>
<td>6%</td>
<td>5%</td>
</tr>
<tr>
<td>Weight Loss</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Fluid Electro Disorder</td>
<td>12%</td>
<td>12%</td>
</tr>
<tr>
<td>Blood Loss Anemia</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Deficiency Anemia</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>Alcohol Abuse</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Drug Abuse</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Psychoses</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Depression</td>
<td>10%</td>
<td>13%</td>
</tr>
</tbody>
</table>

AIDS, acquired immunodeficiency syndrome; CHF, chronic heart failure; COPD, chronic obstructive pulmonary disease; DM, diabetes mellitus; HIV, human immunodeficiency virus; HTN, hypertension; MA, Medicare Advantage; PVD, peripheral vascular disease; RA, rheumatoid arthritis; SMD, standardized mean differences; TM, Traditional Medicare
Study timeline

Jun 1, 2014    Index Hospital Stay    Index SNF Stay    Dec 31, 2016
6 month baseline period

6 month follow-up period