**Precision and Recall of Classification**

***Precision***

The performance of matching patients with different prototypes was used to assess the IC methods, CS methods and SS methods. The precision is shown below.



Supplemental Figure 2 The precision of the performance of classification.

***Recall***

The performance of matching patients with different prototypes was used to assess the IC methods, CS methods and SS methods. The recall is shown below.



Supplemental Figure 3 The recall of the performance of classification.

**Performance of Combinations with Taxonomy-based IC**

When IC is computed based on taxonomy (IC#2 Formula), the performance of matching patients with different prototypes and predicting HLOS length is as shown below. Thess results also confirmed the result shown in the main text.



Supplemental Figure 4 Performance of Combinations using Taxonomy-based IC