

Date: April 27, 2018

Subject: Minimum Eligible Stay Threshold Analysis for the SNF VBP Program

Introduction

This memo provides analysis to inform the policy consideration of a minimum eligible stay threshold for the quality measure used in the Skilled Nursing Facility Value-Based Purchasing (SNF VBP) Program—the *Skilled Nursing Facility 30-Day All-Cause Readmission Measure* (SNFRM; NQF #2510).

Specifically, we estimated the reliability of the measure as calculated for various eligible stay thresholds. We also identified the number of SNFs to which the scoring adjustment proposal would be applied at various thresholds.

Part 1. Reliability Analysis

Overview: Performance Measure Reliability

To assess the reliability of the SNFRM, we followed the split sample reliability used in the evaluation of Inpatient Quality Reporting Program measures (e.g. Hospital Wide Readmission [HWR] measure [NQF #1789]). This approach involves examining the level of agreement between SNFs' scores when calculated based on two mutually exclusive random samples of patients within each facility. Measure development contractors (RTI International) conducted similar testing when the SNFRM was submitted to the National Quality Forum (NQF) for endorsement. This document summarizes results of this testing using more recent data.

Methods: Reliability Testing

We combined the 2014 and 2015 calendar year SNFRM files and selected a random sample at the patient-stay level, splitting the combined years into two halves. We then recalculated the standardized risk ratio (SRR) for each facility for each data set. The level of agreement between the two SRRs calculated on the two different samples gave us a test of the repeatability of the measure. Agreement was evaluated using the Pearson and Intra-class correlation coefficients (ICCs), which assess the strength and direction of the linear correlation between two variables.

We pooled the data sets from 2014 and 2015, splitting the file randomly within SNFs at the patient-stay level into two data sets, with proportional allocation by provider size within CY 2015. The two data sets derived from the two years of pooled data were used for split sample reliability testing. The final analytic files included 15,573 SNFs reporting over 2014-2015 and had the following counts of patient-stays:

Split Sample 1: 1,731,885 index SNF stays in 15,519 facilities

Split Sample 2: 1,731,884 index SNF stays in 15,573 facilities

Results

Examining the level of agreement between SRR scores calculated on each of the split files, we found an overall r of 0.4473 and an overall ICC of 0.4470, indicating a moderate level of agreement between

facilities' SRRs. The results shown in *Table 1* reports the Pearson and Intra-class correlation coefficients for the measure as calculated for various eligible stay thresholds. We find that reliability improves as eligible stay thresholds increase.

Table 1. Observed Pearson Correlation Coefficients and Intra-class Correlation Coefficients on split sample comparison when stratified by various eligible stay thresholds

Eligible Stay Threshold	Number of Eligible Stays	Number of SNFs that Would Receive a Scoring Adjustment	Pearson Correlation Coefficient	Intra-class Correlation Coefficient
5	≥ 5	15,275	0.4476	0.4473
10	≥ 10	14,859	0.4482	0.4480
15	≥ 15	14,348	0.4500	0.4497
20	≥ 20	13,788	0.4522	0.4519
25	≥ 25	13,165	0.4555	0.4552
30	≥ 30	12,558	0.4614	0.4611
50	≥ 50	10,265	0.4842	0.4839
100	≥ 100	6,203	0.5343	0.5341
150	≥ 150	3,735	0.5761	0.5760
<i>None</i>	≥ 1	15,519	0.4473	0.4470

Note: All results were significant at $p < 0.001$.

Source: RTI analysis of SNFRM data from calendar years 2014 and 2015.

For reference, the following are the results based on data from 2009-2010, as submitted to NQF:

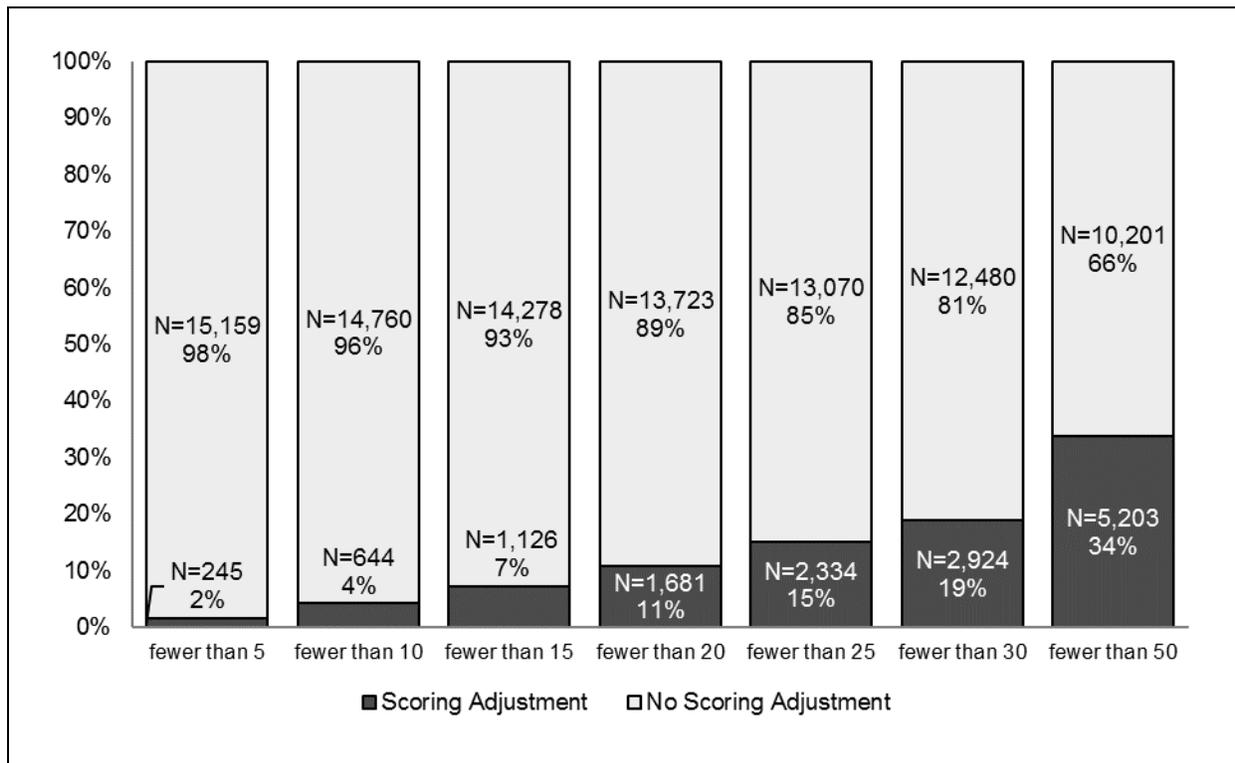
- SNFs with 1-44 stays (n = 4130 SNFs), ICC=0.30
- SNFs with 45-91 stays (n = 4227 SNFs), ICC=0.45
- SNFs with 92-171 stays (n = 4244 SNFs), ICC=0.53
- SNFs with 172-1510 stays (n = 4220 SNFs), ICC=0.70¹

Part 2. Frequency of SNFs Receiving Proposed Scoring Adjustment, by Threshold

Next, we conducted analysis to illustrate the numbers and percentages of SNFs that would receive the proposed scoring adjustment under the SNF VBP Program based on the selected eligible stay thresholds. Please see results in *Figure 1* below. The proportion of SNFs under each eligible stay threshold ranged from 66% (threshold of 50) to 98% (threshold of 5).

¹ Source: RTI analysis of 2009 and 2010 MedPAR data (output:readmit111_HLMFinal_ICC_split_05.lst)

Figure 1. SNF VBP % of Participation by Selected Eligible Stay Thresholds (N=15,404), CY 2015



Source: RTI analysis of SNFRM data from calendar year 2015.

Summary

- In summary, the results of these analyses suggest moderate agreement for split sample reliability for the SNFRM overall (*Table 1*). We found increasing levels of agreement as eligible stay increased.
- Results of the SNFs receiving the proposed scoring adjustment analysis by eligible stay thresholds (*Figure 1*) revealed that as thresholds increase, the scoring adjustment proposal would apply to more SNFs.
- An eligible stay threshold of 25 (used in the Hospital Inpatient and Post-Acute Care Quality Reporting Programs for similar measures), would result in the scoring adjustment proposal being applied to 15 percent of SNFs nationally, or approximately 2,300 SNFs
- Balancing the reliability results and the proportion of SNFs that would receive a scoring adjustment under the SNF VBP program, CMS has proposed implementing an eligible stay threshold of **25**.