NATIONAL QUALITY FORUM
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MEASURE WORKSHEET

This document summarizes the evaluation of the measure as it progresses through NQF's Consensus Development Process (CDP). The information submitted by measure developers/stewards is included after the Brief Measure Information, Preliminary Analysis, and Pre-meeting Public and Member Comments sections.

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Brief Measure Information

NQF #: 2375
Corresponding Measures:
Measure Title: PointRight ® Pro30™
Measure Steward: American Health Care Association
sp.02. Brief Description of Measure: PointRight Pro-30 is an all-cause, risk adjusted rehospitalization measure. It provides the rate at which a patient (regardless of payer status or diagnosis) who enters a skilled nursing facility (SNF) from an acute hospital and is subsequently rehospitalized during their SNF stay, within 30 days from their admission to the SNF.
1b.01. Developer Rationale: Rehospitalization among admissions to SNFs has been identified as frequent and costly by academic studies (Grabowski 2007; Clark, 2010; Mor, 2010; Walsh, 2012), non-profit foundations such as Kaiser Foundation (Jacobson, 2010) and Commonwealth Fund (Schoen, 2013) as well as by government agency studies such as MedPAC (MedPAC, 2012) and CMS (Walsh, 2010).
Most of the reasons for high SNF rehospitalizations have been attributed to structural and process issues not directly related to clinical management of diagnoses listed on the hospital readmission claims (Ouslander, 2012; Ouslander, 2011). In the hospital setting, efforts to reduce rehospitalization also appear related to structure and processes not directly related to the clinical conditions (Dharmarajan, 2013; Hansen, 2011). In fact, a majority of rehospitalizations are for a different diagnosis or reason than their discharge diagnosis and more often reflect the broader condition of the patient and problems with the health care delivery system (Krumholtz, 2013). Solutions proposed by federal agencies have also suggested changes in payment and structural aspects of care (MedPac ,2012; Polniaszek, 2011). CMS's Center for Medicare & Medicaid Innovation is also testing models that promote nurse practitioners, the INTERACT program, and other models, all unrelated to specific clinical practice algorithms.
The frequent occurrence of rehospitalizations, the high cost, and the negative impact hospitalizations have on residents supports the need for a SNF rehospitalization measure. We see this measure as being used by providers (to benchmark their performance to others and to track their progress in quality improvement efforts), by insurance companies (to include in payment models and reporting programs) and by government agencies (to include in public reporting such as CMS's Nursing Home Compare and Medicare or Medicaid payment models).
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Walsh, E.D., Freiman, M., Haber, S., Bragg, A., Ouslander, J., & Wiener, J.M. (2010) Cost drivers for dually eligible beneficiaries: Potentially avoidable hospitalization from nursing facility, skilled nursing facility, and home and community-based services waiver programs, final task 2 report. RTI International.
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sp.12. Numerator Statement: The numerator is the number of patients sent back to any acute care hospital (excluding emergency room only visits) during their SNF stay within 30 days from a SNF admission, as indicated on the MDS 3.0 discharge assessment during a 12 month measurement period.

sp.14. Denominator Statement: The denominator is the number of all admissions, regardless of payer status and diagnosis, with an MDS 3.0 admission assessment to a SNF from an acute hospital during the 12 month measurement period.

sp.16. Denominator Exclusions: Individuals with incomplete MDS assessments are excluded. Payer status and clinical conditions are not used for any exclusions.

Measure Type: Outcome

sp.28. Data Source: Assessment Data

sp.07. Level of Analysis: Facility

IF Endorsement Maintenance – Original Endorsement Date: 12/23/2014

Most Recent Endorsement Date: 12/9/2016

IF this measure is included in a composite, NQF Composite#/title:

IF this measure is paired/grouped, NQF#/title:

sp.03. IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results?:

Preliminary Analysis: Maintenance of Endorsement

To maintain NQF endorsement, endorsed measures are evaluated periodically to ensure that the measure still meets the NQF endorsement criteria ("maintenance"). The emphasis for maintaining endorsement is focused on how effective the measure is for promoting improvements in quality. Endorsed measures should have some experience from the field to inform the evaluation. The emphasis for maintaining endorsement is noted for each criterion.

Criteria 1: Importance to Measure and Report

1a. Evidence

Maintenance measures – less emphasis on evidence unless there is new information or change in evidence since the prior evaluation.

1a. Evidence. The evidence requirements for a ***health outcome*** measure include providing empirical data that demonstrate a relationship between the outcome and at least one healthcare structure, process, intervention, or service; if these data not available, data demonstrating wide variation in performance, assuming the data are from a robust number of providers and results are not subject to systematic bias. For measures derived from patient report, evidence also should demonstrate that the target population values the measured outcome, process, or structure and finds it meaningful.

The developer provides the following description for this measure:

- This is a maintenance outcome measure at the facility level that identifies the rate at which a patient (regardless of payer status or diagnosis) who enters a skilled nursing facility (SNF) from an acute hospital and is subsequently hospitalized during their SNF stay, within 30 days from their admission to the SNF.
- The developer provides a logic model depicting a combination of structure (e.g., lack of proper equipment, medications, poor communication, RN staffing levels), process (e.g., early detection of infection, chronic disease management), and interventions (i.e., adequate adherence to treatment interventions, condition-specific protocols) that influence the likelihood of rehospitalizations more than patient acuity and conditions.

Summary of prior review in 2015

- The developer cited evidence that supports better clinical management in the SNF setting to reduce preventable rehospitalizations, cost, and negative impact on residents.
- The Standing Committee noted that there are processes that skilled nursing facilities can undertake that would improve performance on this measure.

Changes to evidence from last review

☒ The developer attests that there have been no changes in the evidence since the measure was last evaluated.

☐ The developer provided updated evidence for this measure:

Question for the Committee:

- *The developer attests the underlying evidence for the measure has not changed since the last NQF endorsement review. Does the Committee agree the evidence basis for the measure has not changed and there is no need for repeat discussion and vote on Evidence?*
- *Is there at least one thing that the provider can do to achieve a change in the measure results?*

Guidance from the Evidence Algorithm

Health outcome or PRO (Box 1) -> Relationship between the measured health outcome and at least one healthcare action is demonstrated by empirical data (Box 2) -> Pass

Preliminary rating for evidence: ☒ **Pass** ☐ **No Pass**

1b. Gap in Care/Opportunity for Improvement and Disparities

Maintenance measures – increased emphasis on gap and variation

1b. Performance Gap. The performance gap requirements include demonstrating quality problems and opportunity for improvement.

- The developer provided rehospitalization statistics for SNFs nationally for the two most recent quarters (Q4 of 2019 and 2020).
    - For 2019 and 2020, the risk adjusted mean rate was 16.6 percent (2019) and 16.3 percent, respectively.
    - The standard deviation (SD) was 4.9 percent (range 0-58.7 percent, 2019) and 5.2 percent (range 0-81.9 percent, 2020).
- The developer provided rehospitalization rates from the American Health Care Association (AHCA) member facilities from Q4 2011 through Q4 2020.
    - The developer noted that rehospitalization rates have shown a steady decline from Q4 of 2011 through Q3 of 2020 (average improvement of 10.4 percent).
    - The developer noted that the increase in the national average rate for Q4 of 2020 could be related to the COVID-19 pandemic.

Disparities

- The developer provided disparities data for the entire population of individuals admitted to SNF following a hospitalization, including all races and ethnicities regardless of payer status (n= 15, 715 SNFs, 3,739,243 residents).
    - The difference in the average readmission rate between facilities with low (<5 percent) and high (>=35 percent) percentage of minorities has decreased over time (16.5 percent [2011 Q4] to 14.9 percent [2020 Q4]).
    - Facilities with fewer minorities have lower risk adjusted Pro30 readmission rates.
    - The difference in average readmission rates between facilities with low (< 5 percent) and high (>= 35 percent) percentage of minorities (Q4 2020) was 2.8 percent compared to 4.1 percent in Q4 2011.
- The developer provided data by geographical location relative to the CDC's Social Vulnerability Index (SVI).
    - Facilities located in lower SVI counties had lower risk adjusted Pro30 readmission rates.
    - The difference in average readmission rate between facilities in low and high SVI counties has decreased over time (2.7 percent [Q4 2011] and 1.4 percent [Q4 2020]).

Questions for the Committee:

- *The developer attests the underlying evidence for the measure has not changed since the last NQF endorsement review. Does the Committee agree the evidence basis for the measure has not changed and there is no need for repeat discussion and vote on Evidence?*
- *Is there a gap in care that warrants a national performance measure?*

Preliminary rating for opportunity for improvement: ☐ **High** ☒ **Moderate** ☐ **Low** ☐ **Insufficient**

Committee Pre-evaluation Comments:

1a. Evidence

- The measure examines rehospitalizations from SNF within 30 days and cited evidence that support rehospitalization could have been prevented with better clinical management in the SNF
- The only information that could change the evidence base would be the impact of COVID; does that need to be included as a variable?

1b. Gap in Care/Opportunity for Improvement and Disparities

- Yes, performance gap demonstrated by rehospitalization data submitted. The national rehospitalization statistics for SNF (Q4 2019 and 2020) showed risk adjusted mean rate of 16.6% in 2019 and 16.3% in 2020 and SD 4.9% AHCA rehospitalization rates showed a steady decline from Q4 2011- Q3 2020 with an average improvement of 10.4%. The rate did increase in Q4 of 2020 probably due to COVID-19. The developer provided data from 715 SNFs; 3,739,243 residents that included all races and ethnicities. To note, facilities with fewer minorities did have lower risk adjusted Pro30 readmission rates. The average difference in the average readmission rate between facilities with low percentage of minorities and high percentage of minorities decreased from 4.1% in Q4 2011 to 2.8% in Q4 2020. SNFs located in lower Social Vulnerability Index had lower risk adjusted Pro30 readmission rates, however, the difference in the average readmission rate between low and high SVI decreased from 2.7% in Q4 2011 to 1.4% in Q4 2020.
- Data on disparities was provided; data for performance gap was provided but effects of COVID should be included, i.e., staffing issues

Criteria 2: Scientific Acceptability of Measure Properties

Complex measure evaluated by Scientific Methods Panel? ☐ **Yes** ☒ **No**

Evaluators: Staff

2a. Reliability: Specifications and Testing

For maintenance measures – no change in emphasis – specifications should be evaluated the same as with new measures.

2a1. Specifications requires the measure, as specified, to produce consistent (reliable) and credible (valid) results about the quality of care when implemented.

For maintenance measures – less emphasis if no new testing data provided.

2a2. Reliability testing demonstrates if the measure data elements are repeatable, producing the same results a high proportion of the time when assessed in the same population in the same time period and/or that the measure score is precise enough to distinguish differences in performance across providers.

Specifications:

- Measure specifications are clear and precise.

Reliability Testing:

- Reliability testing at the Patient or Encounter-Level:
    - The developer performed parallel forms reliability testing by calculating several measures based on Minimum Data Set (MDS) 3.0 data submitted by over 2,800 SNFs directly to the research team and MDS 3.0 data from these same SNFs provided by CMS.

- The developer calculated rates for admissions, tracking, observed rehospitalizations, and expected rehospitalizations.
- The developer showed that in 206 cases (7%), numbers matched exactly on both the number of admissions and the tracking rate.
- In 1,869 cases (66%), the CMS data observed rate calculation minus the SNF data observed calculation was within 1%.
- In 2,652 cases (94%), the CMS data expected rate calculation minus the SNF data expected calculation was within 1%.

- The developer noted that the results of the testing between the CMS MDS 3.0 data and the data from participating SNFs is reliable.

Questions for the Committee regarding reliability:

- *Do you have any concerns that the measure cannot be consistently implemented (i.e., are measure specifications adequate)?*
- *The developer attests the specifications have not changed and that additional reliability testing was not conducted. Does the Committee agree that the measure is still reliable and there is no need for repeat discussion and vote on Reliability?*

Preliminary rating for reliability: ☐ **High** ☒ **Moderate** ☐ **Low** ☐ **Insufficient**

2b. Validity: Validity testing; Exclusions; Risk-Adjustment; Meaningful Differences; Comparability; Missing Data

For maintenance measures – less emphasis if no new testing data provided.

2b2. Validity testing should demonstrate the measure data elements are correct and/or the measure score correctly reflects the quality of care provided, adequately identifying differences in quality.

2b2-2b6. Potential threats to validity should be assessed/addressed.

Validity Testing

- Validity testing at the Patient or Encounter-Level:
  - The developer compared hospitalization claims submitted to CMS with the MDS 3.0 discharge assessment.
  - The developer noted that 82.9 percent of MDS 3.0 discharge assessments indicating an acute care hospital discharge location could be verified with inpatient claims data
  - An additional 3.7 percent of MDS 3.0 discharges could be verified with outpatient claims.
  - A total of 12.9 percent of MDS 3.0 discharges could not be verified with Medicare claims data.
  - The developer noted that the validity and reliability of this tool has been confirmed by previous analyses presented in peer reviewed literature.
- Validity testing at the Accountable Entity Level:
  - The developer conducted construct validity testing, hypothesizing that the facilities with low rehospitalization rates would correlate with other measures of quality and demonstrate lower rehospitalization rates compare to non-recipients: CMS's Five Star Rating System (i.e., the staffing component, number of survey deficiencies cited by CMS during their annual inspection); AHCA's Baldridge Quality Award Program; and the short stay quality measure for pneumococcal vaccine.

- The developer noted an inverse correlation (-0.15916, p<0.001) between the short stay quality measure for pneumococcal vaccination rates with a facility's rehospitalization rate.
- Inverse relationships were noted between the rehospitalization rate and the overall five-star rating (-0.157 to -0.206, p<0.001), health inspection component of five star (-0.123 to -0.150, p<0.001)), and the nurse staffing component of five star (-0.110 to -0.174, p<0.001).
- Facilities that are a recipient of AHCA's Baldridge based award (silver/gold) have a significantly lower rehospitalization rate compared to non-AHCA member recipients (17.2 vs 17.7 in Q2 2013, p<0.01).

- The developer also compared the measure to two other CMS short-stay measures: Medicare Fee-for-Service (FFS) claims-based rehospitalization (NHC-RM) and Five-Star.
  - The developer hypothesized that Pro30 performance would correlate positively with measure #2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM) and Medicare claims-based rehospitalization measures, NHC-RM
  - The developer found that Pro30 had a statistically significant positive correlation with both Medicare claims-based rehospitalization measures, NHC-RM (0.622, p<0.0001) and SNF-RM (0.586, p<0.0001)

Exclusions

- The developer indicated that there are no exclusions; however, SNFs with fewer than 30 admissions from hospitals were excluded during any 12-month period from rehospitalization rate reporting (n=1,589 SNFs).
- The developer indicated that the average change in rates decreased as the number of admissions increased.
- The developer noted that while rates for the excluded facilities are not reported, admissions and rehospitalizations from these facilities are used to calculate the national rate used in the calculation of the adjusted rehospitalization rate.

Risk Adjustment

- The developer noted that the measure is risk-adjusted and uses a Statistical risk model with 33 risk factors.
- The developer conducted a bootstrap and stability analysis to test and select patient-level risk factors.
- The developer had a clinical panel review the MDS and identify variables that might be expected on clinical grounds to correlate with 30-day readmission risk, and that would be unlikely to change between the day of hospital discharge and the day of the first MDS assessment.
- The candidate variables identified include demographics, chronic condition diagnoses, treatments which began prior to hospital discharge with orders to be continued in the SNF, and functional status items that change slowly (e.g., two-person assist).
- These candidate variables were screened for significant univariate associations with the dependent variable (readmission to any acute care hospital directly from the SNF within 30 days of admission).
- A logistic regression formula was then estimated utilizing the 39 candidate variables; this was progressively refined into one that utilized 33 independent variables.

  - Of the 33 independent variables, 31 of the variables all had relatively low prevalence in the model-building sample
  - With the exception of ventilator status and suction, the variables all had relatively low prevalence in the model-building sample

- The c-statistic of the Pro30 model is 0.669 with a 95% confidence interval (0.6666-0.6851). This means that there is 67% probability that a case (i.e., a person who is readmitted to an acute inpatient facility from the SNF) has higher predicted risk than a non-case.
- The p-value of the Hosmer-Lemeshow statistic for the Pro30 model at the facility level is 0.85, so the developer accepted the hypothesis of no discrepancy between Observed-Expected proportions, concluding that the logistic model is a good fit (well calibrated).
- The developer noted that the risk model assumes that the independent variables (IV) rarely change between the date of admission and the assessment reference date of the first MDS assessment.
    - The developer tested this assumption by looking at the change from the first and second assessments (n=203, 386 assessment seven days apart) to roughly estimate variable stability.
    - The developer identified four variables demonstrating rates of change of greater than 10 percent: Bowel incontinence (Total); Cognition Not Intact; Two-Person Assist; Oxygen.
    - The developer concluded that the facility-level estimates of expected readmission rates are unlikely to be affected greatly by variable instability between the date of admission and the assessment reference date of the first MDS assessment
- The developer noted that when the risk model is applied to data collected on the day of admission it will slightly overestimate the expected risk, because patients with values of 1 for the least stable IVs will be zeros by the day of the first MDS assessment.

Meaningful Differences in Performance

- The developer noted that from Q4 2011 to Q3 2019, there was an 8 percent decrease in the national average rehospitalization rate from 18.2 percent to 16.7.
- The developer noted that the AHCA provided data on rehospitalization for all SNFs nationally. For Q4 2020, the developer showed a risk adjusted mean rate performance of 16.3%, with a standard deviation of 5.2%. The developer also provided a minimum performance of 0% to a max performance of 81.9%. It is unclear if these differences in performance are statistically significant.

Missing Data

- The developer provided distribution data of MDS 3.0 admission and discharge records and the levels and types of missing data by state.
- The developer noted that that the level of completeness is high, defined as 95 percent of admissions have either a discharge assessment completed or another MDS data indicating that the person staying in the facility.
- The developer excluded all facilities with greater than five percent missing data was from the re-hospitalization rate analyses.
- The developer noted that overall, the frequency of missing data is low and that it is recommended to calculate the degree of missing data in the numerator and not report a facility's rate if MDS discharge assessment data is missing at least 95 percent of the time.

Comparability

- The measure only uses one set of specifications for this measure.

Questions for the Committee regarding validity:

- *Do you have any concerns regarding the validity of the measure (e.g., exclusions, risk-adjustment approach, etc.)?*

Preliminary rating for validity: ☐ **High** ☒ **Moderate** ☐ **Low** ☐ **Insufficient**

Committee Pre-evaluation Comments:

2a. Reliability-Specification

- Reliability testing done at the patient or encounter level. Developer reviewed MDS 3.0 data that was submitted by over 2,800 SNFs to MDS data provided by CMS from these same SNFs. Parallel reliability testing showed CMS observed rate and expected rate minus SNF data observed and expected data was within 1%
- no concerns

2a2. Reliability-Testing

- No
- no concerns

2b1. Validity-Testing

- No. Validity testing done at the patient or encounter level and the accountable entity level.
- no concerns

2b2-2b3. Potential threats to validity

- SNFs with fewer than 30 admissions from hospitals excluded rehospitalization rate reporting but these facilities were used in the calculation of the adjusted rehospitalization rate used to calculate the national rate. Measure is risk-adjusted. The risk adjustment used statistical risk model with 33 risk factors. Bootstrap and stability analysis done to test and select patient level risk factors. Candidate variables were identified, and univariate analysis done. Logistic regression model revealed 33 independent variables. 31 variables had a relatively low prevalence, and two variables (ventilator status and suctions) were higher. The c-statistic model is 0.669 with 95% confidence interval (0.6666-0.6851). There is a 67% probability that rehospitalization from SNF to acute inpatient facility has a higher predicted risk. The developer looked at assessments done on admission and the first MDS assessment to test for variability. There were four variables that the change was greater than 10; Bowel incontinence (Total), Cognition Not intact, Two-person assist and Oxygen use. The developer concluded that at the facility-level it is unlikely that readmission rates would be greatly affected by variable instability between the admission assessment and the first MDS assessment
- no concerns

2b4-2b7. Potential threats to validity

- The developer noted that the frequency of missing data is low. SNFs with greater than 5% missing data was excluded from the rehospitalization rate analysis. The national average rehospitalization rate decreased by 8% (18>2% to 16.7%) from Q4 2011 to Q3 2019.
- As long as missing data remains less than or equal to 5%, no concerns.

Criterion 3. Feasibility

Maintenance measures – no change in emphasis – implementation issues may be more prominent

3. Feasibility is the extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

- The developer noted that data elements needed to compute the measure score can be generated or collected by healthcare personnel during the provision of care.
- All data elements are in defined fields in electronic clinical data (e.g., clinical registry, nursing home MDS, home health OASIS).
- The developer noted that computation of the measure requires a license to use software for large-scale data management and calculation of risk estimates using logistic regression models.
- The developer noted that while utilization of the measure specifications does not require a fee, there is a requirement that display, disclosure, or publication of the measure must include the measure's trademark and that the measure specifications are copyrighted by Point Right®.

Questions for the Committee:

- *Are the required data elements routinely generated and used during care delivery?*
- *Are the required data elements available in electronic form, e.g., EHR or other electronic sources?*
- *Is the data collection strategy ready to be put into operational use?*

Preliminary rating for feasibility: ☐ **High** ☒ **Moderate** ☐ **Low** ☐ **Insufficient**

Committee Pre-evaluation Comments:

3. Feasibility

- All data elements are already collected electronically. Other data can be collected by healthcare personnel during care.
- Only two states included; a more diverse geographic representation should have been implemented.

Criterion 4: Use and Usability

Maintenance measures – increased emphasis – much greater focus on measure use and usefulness, including both impact/improvement and unintended consequences

4a. Use (4a1. Accountability and Transparency; 4a2. Feedback on measure)

4a. Use evaluates the extent to which audiences (e.g., consumers, purchasers, providers, policymakers) use or could use performance results for both accountability and performance improvement activities.

4a.1. Accountability and Transparency. Performance results are used in at least one accountability application within three years after initial endorsement and are publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

Current uses of the measure

Publicly reported?	☒	Yes	☐	No		
Current use in an accountability program?	☒	Yes	☐	No	☐	UNCLEAR
Planned use in an accountability program?	☐	Yes	☐	No	☒	NA

Accountability program details

- The measure is utilized in two state Medicaid programs (California and Hawaii) as part of their value-based purchasing (VBP) or pay-for-performance (P4P) programs, as well as individual providers and networks.
- The developer noted that Pro30 is an all-payer measure and is utilized in negotiating reimbursement rates and incentive payments with Medicare Advantage plans, managed care organizations, and other referral partners.

4a.2. Feedback on the measure by those being measured or others. Three criteria demonstrate feedback: 1) those being measured have been given performance results or data, as well as assistance with interpreting the measure results and data; 2) those being measured, and other users have been given an opportunity to provide feedback on the measure performance or implementation; 3) this feedback has been considered when changes are incorporated into the measure

Feedback on the measure by those being measured or others

- The developer publishes Pro30 rates on AHCA's Long-Term Care (LTC) Trend Tracker tool quarterly for members to track and benchmark their organization's Pro30 performance.
- The developer publishes facility-level rates publicly on the AHCA website on a quarterly basis.
- Net Health PointRight® Pro 30® Rehospitalization and QASP performance data are updated on an ongoing daily basis and available to all Net Health customers who subscribe to these web-based software solutions.
- The developer noted that the results of all participating facilities nationwide (n= 2,00 SNFs) are presented in the PointRight ScoreCard solution, which updates every monthly.
- The developer noted that Net Health customers share feedback through the following ways: direct conversations with Analytics, Product Management, Sales, and Client Services team members; in-application messaging; email; and in conjunction with their Net Promoter Score (NPS) customer satisfaction surveys.
- The developer highlighted feedback obtained from Net Health customers who use Pro30 to monitor and manage their rehospitalization outcomes.
    - Users feel secure and in a competitive position as a preferred partner for post-acute care
    - Users achieve and sustain excellence in reducing their rehospitalization rates
    - Users feel they can leverage the benefits of communicating their rehospitalization performance with stakeholders using a standard, risk-adjusted, NQF-endorsed measure
    - Users can prepare for and best position their organizations for value-based incentives and penalties

***Questions for the Committee**:*

- *How have (or can) the performance results be used to further the goal of high-quality, efficient healthcare?*
- *How has the measure been vetted in real-world settings by those being measured or others?*
- *How are those being measured and other users have been given an opportunity to provide feedback on the measure performance or implementation?*
- *How is feedback considered when changes are incorporated into the measure?*

Preliminary rating for Use: ☒ Pass ☐ No Pass

4b. Usability (4b1. Improvement; 4b2. Benefits of measure)

4b. Usability evaluates the extent to which audiences (e.g., consumers, purchasers, providers, policymakers) use or could use performance results for both accountability and performance improvement activities.

4b.1 Improvement. Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated.

Improvement results

- The developer provided rehospitalization rates from the American Health Care Association (AHCA) member facilities.
    - The developer noted an improvement in rehospitalization rates of 10.4 percent from Q4 2011 (18.0 -18.5 percent) through Q4 2020 (16.0-16.5 percent).
- The developer noted that an increase in the national average rate for Q4 of 2020 could be related to the COVID-19 pandemic.

4b2. Benefits vs. harms. Benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

Unexpected findings (positive or negative) during implementation

- The developer did not indicate any unexpected findings associated with the implementation of this measure.

Potential harms

- No potential harms noted by the developer.

***Questions for the Committee**:*

- *How can the performance results be used to further the goal of high-quality, efficient healthcare?*
- *Do the benefits of the measure outweigh any potential unintended consequences?*

Preliminary rating for Usability and use: ☐ **High** ☒ **Moderate** ☐ **Low** ☐ **Insufficient**

Committee Pre-evaluation Comments:

4a. Use

- Currently in use in California and Hawaii Medicaid programs as part of their value-based purchasing or pay for performance programs. The Pro30 measure is used to negotiate reimbursement rates and incentive payments with Medicare Advantage plans, MCO and other referral partners. The developer stated that facilities are given performance results and data, and helped to interpret the results; they are given opportunity to provide feedback on the measure; and this feedback is considered when changes are made to the measure
- Did not see that feedback was considered for changes to the measure.

4b. Usability

- Rehospitalization rates improved from Q4 2011 (18.0-18.5%) through Q4 2020 (16.0-16.5%). No potential harms identified by the developer
- no unintended consequences were noted

Criterion 5: Related and Competing Measures

Related measures

- NQF #2827 PointRight ® Pro Long Stay ™ Hospitalization Measure

Competing measures

- NQF #2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

Harmonization

- The developer indicates that the measure specifications are harmonized to the extent possible.
- The developer noted that NQF #2510 is Medicare claims-based and cannot capture all the rehospitalizations that occur during a SNF stay that Pro30 can through all-payer MDS data.

Committee Pre-evaluation Comments:

5: Related and Competing Measures

- Competing measure NQF#2510 but developer noted that this measure is Medicare claim based and it cannot capture all the rehospitalizations that occur during a SNF stay as the Pro30 can using all-payer MDS data. The developer noted that measure was harmonized to fullest extent possible
- To some extent, the measure competes with existing NQF measures; need to harmonize with current measures to prevent reporting burden for providers; also would decrease the potential for conflicts in reporting..

Public and NQF Member Comments (Submitted as of Month Day, Year)

Member Expression of Support

- No members submitted an expression of support for this measure.

Comments

- No NQF member and public comments were received in advance of the Standing Committee evaluation.

Scientific Acceptability Evaluation

RELIABILITY: SPECIFICATIONS

1. **Have measure specifications changed since the last review? ☐ Yes ☒ No**
2. **Are submitted specifications precise, unambiguous, and complete so that they can be consistently implemented? ☒ Yes ☐ No**
3. **Briefly summarize any changes to the measure specifications and/or concerns about the measure specifications.**
   - The Standing Committee expressed concern with the lack of exclusions for this measure.

RELIABILITY: TESTING

4. **Did the developer conduct new reliability testing? ☐ Yes ☒ No**

   4a. If no, summarize the Standing Committee's previous feedback:

- The Standing Committee expressed concern that the measure does not exclude planned readmissions from the measure. Given the lack of planned readmission exclusions, some argued that the measure might not be actionable at the facility level or allow for appropriate accountability.

4b. If yes, describe any differences between the new and old testing and summarize any relevant Standing Committee's feedback from the previous review:

- Not Applicable

5. **Reliability testing level:** ☐ **Accountable-Entity Level** ☒ **Patient/Encounter Level** ☐ **Neither**
6. **Reliability testing was conducted with the data source and level of analysis indicated for this measure:**

   ☒ **Yes** ☐ **No**
7. If accountable-entity level and/or patient/encounter level reliability testing was NOT conducted or if the methods used were NOT appropriate, was **empirical VALIDITY testing** of patient-level data conducted?

   ☐ **Yes** ☐ **No**
8. **Assess the method(s) used for reliability testing:**
   - The developer performed parallel forms reliability testing by calculating several measures based on MDS 3.0 data submitted by over 2,800 SNFs directly to the research team and MDS 3.0 data from these same SNFs provided by CMS.
   - The developer calculated rates for admissions, tracking, observed rehospitalizations, and expected rehospitalizations.
   - The developer showed that in 206 cases (7%), numbers matched exactly on both the number of admissions and the tracking rate.
   - In 1,869 cases (66%), the CMS data observed rate calculation minus the SNF data observed calculation was within 1%.
   - In 2,652 cases (94%), the CMS data expected rate calculation minus the SNF data expected calculation was within 1%.
9. **Assess the results of reliability testing**
   - The developer noted that the results of the testing between the CMS MDS 3.0 data and the data from participating SNFs is reliable.
10. Was the method described and appropriate for assessing the proportion of variability due to real differences among measured entities? **NOTE:** If multiple methods used, at least one must be appropriate.

    ☒ **Yes** ☐ **No** ☐ **Not applicable**
11. Was the method described and appropriate for assessing the reliability of ALL critical data elements?

    ☒ **Yes** ☐ **No** ☐ **Not applicable** (patient/encounter level testing was not performed)
12. **OVERALL RATING OF RELIABILITY** (taking into account precision of specifications and all testing results):

    ☐ **High** (NOTE: Can be HIGH only if accountable-entity level testing has been conducted)

    ☒ **Moderate** (NOTE: Moderate is the highest eligible rating if accountable-entity level testing has not been conducted)

    ☐ **Low** (NOTE: Should rate LOW if you believe specifications are NOT precise, unambiguous, and complete or if testing methods/results are not adequate)

    ☐ **Insufficient** (NOTE: Should rate INSUFFICIENT if you believe you do not have the information you need to make a rating decision)
13. **Briefly explain rationale for the rating of OVERALL RATING OF RELIABILITY and any concerns you may have with the approach to demonstrating reliability.**
    - Specifications precise, unambiguous, and complete (Box 1) -> Empirical reliability testing conducted using statistical tests with the measure as specified (Box 2) -> Empirical reliability testing not

conducted at the accountable entity level (Box 4) ->Empirical reliability testing conducted on all critical patient/encounter data elements (Box 8) -> Method described as appropriate for assessing reliability of all elements (Box 9) -> Moderate certainty or confidence that the elements used in the measure are reliable (Box 10a) -> Moderate rating

VALIDITY: TESTING

14. **Did the developer conduct new validity testing? ☒ Yes ☐ No**

14a. If no, summarize the Standing Committee's previous feedback:

14b. If yes, describe any differences between the new and old testing and summarize any relevant Standing Committee's feedback from the previous review:

- The developer compared the measure to two other CMS short-stay measures: Medicare Fee-for-Service (FFS) claims-based rehospitalization (NHC-RM) and Five-Star.
    - The developer hypothesized that Pro30 performance would correlate positively with measure #2510 *Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)* and Medicare claims-based rehospitalization measures, NHC-RM
    - The developer found that Pro30 had a statistically significant positive correlation with both Medicare claims-based rehospitalization measures, NHC-RM (0.622, $p<0.0001$) and SNF-RM (0.586, $p<0.0001$)

15. **Validity testing level (check all that apply):**

    ☒ Accountable-Entity Level ☐ Patient or Encounter-Level ☒ Both

    NOTE: Empirical validity testing is expected at time of maintenance review; if not possible, justification is required.

16. **If patient/encounter level validity testing was provided, was the method described and appropriate for assessing the accuracy of ALL critical data elements? NOTE:** Data element validation from the literature is acceptable.

    ☒ **Yes**

    ☐ **No**

    ☐ **Not applicable** (patient/encounter level testing was not performed)

17. **Method of establishing validity at the accountable-entity level:**

    ☐ **Face validity**

    ☒ **Empirical validity testing at the accountable-entity level**

    ☒ **N/A (accountable-entity level testing not conducted)**

18. **Was the method described and appropriate for assessing conceptually and theoretically sound hypothesized relationships?**

    ☒ **Yes**

    ☐ **No**

    ☐ **Not applicable** (accountable-entity level testing was not performed)

19. **Assess the method(s) for establishing validity**

- The developer compared hospitalization claims submitted to CMS with the MDS 3.0 discharge assessment.
- The developer conducted construct validity testing, hypothesizing that the facilities with low rehospitalization rates would correlate with other measures of quality and demonstrate lower rehospitalization rates compare to non-recipients: CMS's Five Star Rating System (i.e., the staffing

component, number of survey deficiencies cited by CMS during their annual inspection); AHCA's Baldridge Quality Award Program; and the short stay quality measure for pneumococcal vaccine.

- The developer noted an inverse correlation (-0.15916, p<0.001) between the short stay quality measure for pneumococcal vaccination rates with a facility's rehospitalization rate.
- Inverse relationships were noted between the rehospitalization rate and the overall five-star rating (-0.157 to -0.206, p<0.001), health inspection component of five star (-0.123 to -0.150, p<0.001)), and the nurse staffing component of five star (-0.110 to -0.174, p<0.001).
- Facilities that are a recipient of AHCA's Baldridge based award (silver/gold) have a significantly lower rehospitalization rate compared to non-AHCA member recipients (17.2 vs 17.7 in Q2 2013, p<0.01).
- The developer also compared the measure to two other CMS short-stay measures: Medicare Fee-for-Service (FFS) claims-based rehospitalization (NHC-RM) and Five-Star.
- The developer hypothesized that Pro30 performance would correlate positively with measure #2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM) and Medicare claims-based rehospitalization measures, NHC-RM
- The developer found that Pro30 had a statistically significant positive correlation with both Medicare claims-based rehospitalization measures, NHC-RM (0.622, p<0.0001) and SNF-RM (0.586, p<0.0001)

20. **Assess the results(s) for establishing validity**

- The developer noted that 82.9 percent of MDS 3.0 discharge assessments indicating an acute care hospital discharge location could be verified with inpatient claims data
- An additional 3.7 percent of MDS 3.0 discharges could be verified with outpatient claims.
- A total of 12.9 percent of MDS 3.0 discharges could not be verified with Medicare claims data.
- The developer noted an inverse correlation (-0.15916, p<0.001) between the short stay quality measure for pneumococcal vaccination rates with a facility's rehospitalization rate.
- Inverse relationships were noted between the rehospitalization rate and the overall five-star rating (-0.157 to -0.206, p<0.001), health inspection component of five star (-0.123 to -0.150, p<0.001)), and the nurse staffing component of five star (-0.110 to -0.174, p<0.001).
- Facilities that are a recipient of AHCA's Baldridge based award (silver/gold) have a significantly lower rehospitalization rate compared to non-AHCA member recipients (17.2 vs 17.7 in Q2 2013, p<0.01).
- The developer hypothesized that Pro30 performance would correlate positively with measure #2510 Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM) and Medicare claims-based rehospitalization measures, NHC-RM
- The developer found that Pro30 had a statistically significant positive correlation with both Medicare claims-based rehospitalization measures, NHC-RM (0.622, p<0.0001) and SNF-RM (0.586, p<0.0001)

VALIDITY: ASSESSMENT OF THREATS TO VALIDITY

21. **Please describe any concerns you have with measure exclusions.**

- Due to the measure excluding planned readmissions, the lack of planned readmission exclusions, measure may not be actionable at the facility level or allow for appropriate accountability.

22. **Risk Adjustment**

22a. **Risk-adjustment method**

☐ None (only answer Question 20b and 20e) ☒ Statistical model ☐ Stratification

☐ Other method assessing risk factors (please specify)

22b. **If not risk-adjusted, is this supported by either a conceptual rationale or empirical analyses?**

☐ Yes ☐ No ☒ Not applicable

22c. **Social risk adjustment:**

22c.1 Are social risk factors included in risk model? ☐ Yes ☒ No ☐ Not applicable

22c.2 Conceptual rationale for social risk factors included? ☐ Yes ☐ No

22c.3 Is there a conceptual relationship between potential social risk factor variables and the measure focus? ☐ Yes ☐ No

22d. **Risk adjustment summary:**

22d.1 All of the risk-adjustment variables present at the start of care? ☒ Yes ☐ No

22d.2 If factors not present at the start of care, do you agree with the rationale provided for inclusion? ☐ Yes ☐ No

22d.3 Is the risk adjustment approach appropriately developed and assessed? ☒ Yes ☐ No

22d.4 Do analyses indicate acceptable results (e.g., acceptable discrimination and calibration) ☒ Yes ☐ No

22d.5. Appropriate risk-adjustment strategy included in the measure? ☒ Yes ☐ No

22e**. Assess the risk-adjustment approach**

- Statistical risk model with 33 risk factors
- The developer conducted a bootstrap and stability analysis to test and select patient-level risk factors.
- The developer had a clinical panel review the MDS and identify variables that might be expected on clinical grounds to correlate with 30-day readmission risk, and that would be unlikely to change between the day of hospital discharge and the day of the first MDS assessment.
- The candidate variables identified include demographics, chronic condition diagnoses, treatments which began prior to hospital discharge with orders to be continued in the SNF, and functional status items that change slowly (e.g., two-person assist).
- These candidate variables were screened for significant univariate associations with the dependent variable (readmission to any acute care hospital directly from the SNF within 30 days of admission).
- A logistic regression formula was then estimated utilizing the 39 candidate variables; this was progressively refined into one that utilized 33 independent variables.
- Ventilator status and suction were strongly associated with tracheostomy care, thus the developer noted that only one of the three variables was significant in the multivariate model that they ultimately selected for risk adjustment of readmission rates.
- The c-statistic of the Pro30 model is 0.669 with a 95% confidence interval (0.6666-0.6851). This means that there is 67% probability that a case (i.e., a person who is readmitted to an acute inpatient facility from the SNF) has higher predicted risk than a non-case.
- The p-value of the Hosmer-Lemeshow statistic for the Pro30 model at the facility level is 0.85, so the developer accepted the hypothesis of no discrepancy between Observed-Expected proportions, concluding that the logistic model is a good fit (well calibrated).

23. **Please describe any concerns you have regarding the ability to identify meaningful differences in performance.**

- The developer noted an 8 percent decrease in the national average rehospitalization rate from 18.2 percent to 16.7percent during this time period.
- The developer noted that no tests of clinically meaningful differences between providers or observation periods were performed.
- The developer noted that the AHCA provided data on rehospitalization for all SNFs nationally. For Q4 2020, the developer showed a risk adjusted mean rate performance of 16.3%, with a standard deviation of 5.2%. The developer also provided a minimum performance of 0% to a max performance of 81.9%. It is unclear if these differences in performance are statistically significant.

24. **Please describe any concerns you have regarding comparability of results if multiple data sources or methods are specified.**
    - The developer noted that there is only one set of specifications for this measure.
25. **Please describe any concerns you have regarding missing data.**
    - The developer provided distribution data of MDS 3.0 admission and discharge records and the levels and types of missing data by state.
    - The developer noted that results indicate a high level of completeness as 95 percent of admissions have either a discharge assessment completed or another MDS data indicating that the person staying in the facility.
    - The developer excluded all facilities with greater than five percent missing data was from the re-hospitalization rate analyses.
26. **OVERALL RATING OF VALIDITY taking into account the results and scope of all testing and analysis of potential threats.**

    ☐ **High** (NOTE: Can be HIGH only if accountable-entity level testing has been conducted)

    ☒ **Moderate** (NOTE: Moderate is the highest eligible rating if accountable-entity level testing has NOT been conducted)

    ☐ **Low** (NOTE: Should rate LOW if you believe that there are threats to validity and/or relevant threats to validity were not assessed OR if testing methods/results are not adequate)

    ☐ **Insufficient** (NOTE: For instrument-based measures and some composite measures, testing at both the accountable-entity level and the patient/encounter level is required; if not conducted, should rate as INSUFFICIENT.)
27. **Briefly explain rationale for rating of OVERALL RATING OF VALIDITY and any concerns you may have with the developers' approach to demonstrating validity.**

Threats to validity empirically assessed (Box 1) -> Empirical validity testing conducted using the measure as specified (Box 2) -> Empirical validity conducted at the accountable entity level (Box 5) -> Validity testing method described and appropriate (Box 6) -> Moderate certainty or confidence (Box 7b) -> Moderate rating

ADDITIONAL RECOMMENDATIONS

28. **If you have listed any concerns in this form, do you believe these concerns warrant further discussion by the multi-stakeholder Standing Committee? If so, please list those concerns below.**
    - N/A

Developer Submission

Criteria 1: Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. Measures must be judged to meet all sub criteria to pass this criterion and be evaluated against the remaining criteria

1a. Evidence

1ma.01. Indicate whether there is new evidence about the measure since the most recent maintenance evaluation. If yes, please briefly summarize the new evidence, and ensure you have updated entries in the Evidence section as needed.

[Response Begins]

No

[Response Ends]

Please separate added or updated information from the most recent measure evaluation within each question response in the Importance to Measure and Report: Evidence section. For example:

2021 Submission:

Updated evidence information here.

2018 Submission:

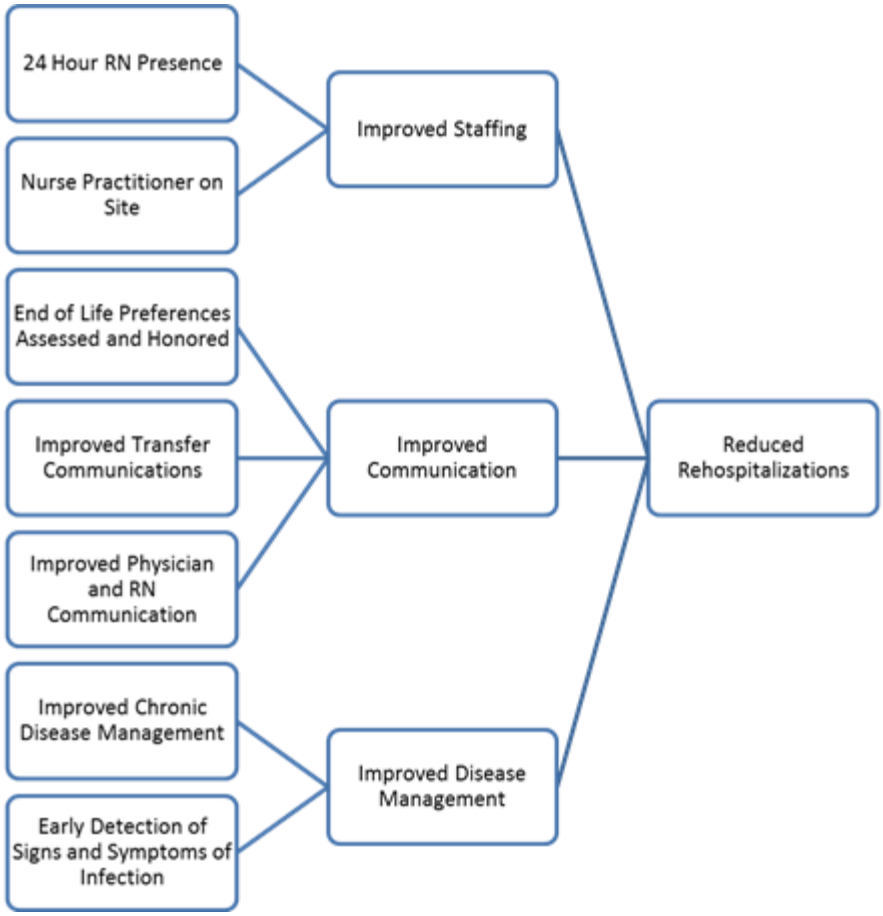
Evidence from the previous submission here.

1a.01. Provide a logic model.

Briefly describe the steps between the healthcare structures and processes (e.g., interventions, or services) and the patient's health outcome(s). The relationships in the diagram should be easily understood by general, non-technical audiences. Indicate the structure, process or outcome being measured.

[Response Begins]

Rehospitalizations of any cause among individuals admitted to a skilled nursing facility (SNF) is the result of numerous clinical and non-clinical situations (Ouslander, 2012). The pathway leading to rehospitalizations is complex and differs for when the rehospitalization occurs after admission. However, a combination of structure, process and interventions influence the likelihood of rehospitalizations more than patient acuity and condition (Ouslander, 2012; Young et al., 2011). For early rehospitalizations following transfers from a hospital to a SNF, structural causes such as lack of equipment or medications upon arrival to the SNF often lead to rapid rehospitalizations. Inadequate information on transfer from the hospital to the SNF is another contributor for early rehospitalizations. For rehospitalizations occurring several days after transfer, structural causes such as those related to staffing levels (e.g., 24 RN presence) and type (e.g. nurse practitioner availability) are associated with lower rehospitalization rates. Processes and interventions such as early detection of signs and symptoms of impending infections (pneumonia, UTI, etc.) and chronic disease exacerbation (e.g. CHF, DM, etc.) can help reduce rehospitalizations. Inadequate adherence to treatment interventions and protocols for such conditions as pneumonia or UTI also lead to rehospitalizations. Ineffective communication between the RN and attending physician also commonly leads to rehospitalizations. Lack of discussion about end-of-life preferences including Do Not Hospitalize preferences lead to more rehospitalizations than necessary.



Logic model of structure and processes that influence rehospitalizations

Oslander, J.G., & Maslow, K. (2012). Geriatrics and the triple aim: Defining preventable hospitalizations in the long-term care population. *J Am Geriatr Soc.*, 60(12): 2313-2318.

Young, Y., Inamdar, S., Dichter, B.S., Kilburn, H., & Hannan, E.L. (2011). Clinical and nonclinical factors associated with potentially preventable hospitalizations among nursing home residents in New York state. *JAMDA*, 5: 364-371.

[Response Ends]

1a.02. Provide evidence that the target population values the measured outcome, process, or structure and finds it meaningful.

Describe how and from whom input was obtained.

[Response Begins]

Studies show rehospitalizations of the elderly negatively impact mobility, function, and mortality (Brown et al. 2009; Creditor, 1993; Lum et al., 2012). Rehospitalizations can cause complications unrelated to the primary reason for the hospitalization. These negative effects are driven by a decline in muscle strength, increased stress, and exposure to possible infections during a hospital stay, where physical movement is often restricted. Elderly individuals with dementia or memory loss can also find waking up in a hospital room disorienting. Thus, elderly individuals generally value avoiding hospitalizations when possible.

Brown, C.J., Roth, D.L, Allman, R.M., Sawyer, P., Ritchie, C.S., Roseman, J.M. (2009). Trajectories of life-space mobility after hospitalization. Ann Intern Med. 150(6): 372-378.

Creditor, M.C. (1993). Hazards of hospitalization of the elderly. Ann Intern Med. 118(3): 219-223.

Lum, H.D., Studenski, S.A., Degenholtz, H.B., Hardy, S.E. (2012). Early hospital readmission is a predictor of one-year mortality in community-dwelling older Medicare beneficiaries. Journal of General Internal Medicine. 27(11): 1467-74.

[Response Ends]

1a.03. Provide empirical data demonstrating the relationship between the outcome (or PRO) and at least one healthcare structure, process, intervention, or service.

[Response Begins]

A large portion of the rehospitalizations have hospital admission diagnoses suggesting that better clinical management in the SNF may have prevented the rehospitalization (Halfon et al., 2006; Spector, 2013; Walker, 2009). Following expert physician review of cases, many of the rehospitalizations are felt to be preventable and are often a result of the lack of early detection of the patient's clinical deterioration by SNF staff (Saliba ,2000; Ouslander, 2010). In addition, adequacy of information upon transfer from the hospital to the SNF (Brook, 2013), the availability of information to physicians and SNFs (MedPac, 2012); the communication between the SNF staff and the attending physician (Ouslander, 2011) and discussions about end of life (Berkowitz, 2011) have all been shown as significant contributors to higher rehospitalizations from SNF.

Berkowitz, R.E., Jones, R.N., Rieder, R., Bryan, M., Schreiber, R., Verney, S., & Paasche-Orlow, M.K. (2011). Improving disposition outcomes for patients in a geriatric nursing facility. *J Am Geriatr Soc.*, 59: 1130-1136.

Brock, J., Mitchell, J., Irby, K., Stevens, B., Archibald, T., Goroski, A., & Lynn, J. (2013). Association between quality improvement for care transitions in communities and rehospitalizations among Medicare beneficiaries. *JAMA*, 309(4).

Halfon, P., Eggli, Y., Pretre-Rohrback, I., Meylan, D., Marazzi, A., & Burnand, B. (2006). Validation of the potentially avoidable hospital readmission rate as a routine indicator of the quality of hospital care. *Medical Care*, 44(11): 972-981.

MedPAC. (2012) Report to congress: Payment policy.

http://medpac.gov/documents/mar12_entirereport.pdf

Ouslander, J.G., Lamb,G., Tappen, R., Herndon, L., Diaz, S., Roos, B.A., … Bonner, A. (2011). Interventions to reduce hospitalizations from nursing homes: Evaluation of the INTERACT II collaborative quality improvement project. *J Am Geriatr Soc.*, 59(4): 745-753.

Saliba, D., Kington, R., Buchanan, J., Bell, R., Wang, M., Lee, M., …Rubenstein, L. (2000). Appropriateness of the decision to transfer nursing facility residents to the hospital. *J Am Geriatr Soc.*, 48(2): 154-163.

Spector, W.D., Limcangco, R., Williams, C., Rhodes, W., & Hurd, D. (2013). Potentially Avoidable Hospitalizations for Elderly Long-stay residents in nursing homes. *Medical Care*, 51(8):673-681.

Walker, J.D., Teare, G.F., Hogan, D.B., Lewis, S., & Maxwell, C.J. (2009). Identifying potentially avoidable hospital admissions form Canadian long-term care facilities. *Medical Care*, 47(2):250-254.

[Response Ends]

1b. Performance Gap

1b.01. Briefly explain the rationale for this measure.

Explain how the measure will improve the quality of care, and list the benefits or improvements in quality envisioned by use of this measure.

[Response Begins]

Rehospitalization among admissions to SNFs has been identified as frequent and costly by academic studies (Grabowski 2007; Clark, 2010; Mor, 2010; Walsh, 2012), non-profit foundations such as Kaiser Foundation (Jacobson, 2010) and Commonwealth Fund (Schoen, 2013) as well as by government agency studies such as MedPAC (MedPAC, 2012) and CMS (Walsh, 2010).

Most of the reasons for high SNF rehospitalizations have been attributed to structural and process issues not directly related to clinical management of diagnoses listed on the hospital readmission claims (Ouslander, 2012; Ouslander, 2011). In the hospital setting, efforts to reduce rehospitalization also appear related to structure and processes not

directly related to the clinical conditions (Dharmarajan, 2013; Hansen, 2011). In fact, a majority of rehospitalizations are for a different diagnosis or reason than their discharge diagnosis and more often reflect the broader condition of the patient and problems with the health care delivery system (Krumholtz, 2013). Solutions proposed by federal agencies have also suggested changes in payment and structural aspects of care (MedPac ,2012; Polniaszek, 2011). CMS's Center for Medicare & Medicaid Innovation is also testing models that promote nurse practitioners, the INTERACT program, and other models, all unrelated to specific clinical practice algorithms.

The frequent occurrence of rehospitalizations, the high cost, and the negative impact hospitalizations have on residents supports the need for a SNF rehospitalization measure. We see this measure as being used by providers (to benchmark their performance to others and to track their progress in quality improvement efforts), by insurance companies (to include in payment models and reporting programs) and by government agencies (to include in public reporting such as CMS's Nursing Home Compare and Medicare or Medicaid payment models).

Dharmarajan, K., Hsieh, A., Lin A., Bueno, H., Ross, J.S., Horwitz, L., … Hines, H.J. (2013). Hospital readmission performance and patterns of readmission: Retrospective cohort study of Medicare admissions. BMJ, 347.

Jacobson, G., Neuman, T., & Damico, A. (2010). Medicare spending and use of medical services for beneficiaries in nursing homes and other long term care facilities: A potential for achieving Medicare saving and improving the quality of care. The Henry J. Kaiser Family Foundation.

Krumholz, H.M. (2013). Post-hospital syndrome- an acquired, transient condition of generalized risk. NEJM, 386(2): 100-102.

MedPAC. (2012) Report to congress: Payment policy. http://medpac.gov/documents/mar12_e ntirereport.pdf

Mor, V., Intrator, O., Feng, Z., & Grabowski, D.C. (2010). The revolving door of rehospitalizations from skilled nursing facilities. Health Affairs, 29(1): 57-64.

Oslander, J.G., & Maslow, K. (2012). Geriatrics and the triple aim: Defining preventable hospitalizations in the long-term care population. J Am Geriatr Soc., 60(12): 2313-2318.

Ouslander, J.G., & Bersenson, R.A. (2011). Reducing unnecessary hospitalization of nursing home residents. NEJM, 356(13): 1165-1167.

Ouslander, J.G., Lamb, G., Perloe, M., Givens, J.H., Kluge, L., Rutland, T, … Saliba, D. (2010). Potentially avoidable hospitalizations of nursing home residents: Frequency, causes, and costs. J Am Geriatr Soc., 58(4): 627-635.

Ouslander, J.G., Lamb,G., Tappen, R., Herndon, L., Diaz, S., Roos, B.A., … Bonner, A. (2011). Interventions to reduce hospitalizations from nursing homes: Evaluation of the INTERACT II collaborative quality improvement project. J Am Geriatr Soc., 59(4): 745-753.

Polniaszek, S., Walsh, E.G., & Wiener, J.M. (2011). Hospitalizations of nursing home residents: Background and options. Office of the Assistant Secretary for Planning and Evaluation, http://aspe.hhs.gov/daltcp/reports/2011/NHResHosp.pdf

Schoen, C., Radley, D., Riley, P., Lippa, J., Berenson, J., Dermody, C., & Shih A. (2013). Health Care in the two Americas: Findings from the scorecard on the state health system performance for low-income populations. The Commonwealth Fund.

http://www.commonwealthfund.org/Publications/Fund-Reports/2013/Sep/Low-Income-Scorecard.aspx

Walsh, E.D., Freiman, M., Haber, S., Bragg, A., Ouslander, J., & Wiener, J.M. (2010) Cost drivers for dually eligible beneficiaries: Potentially avoidable hospitalization from nursing facility, skilled nursing facility, and home and community-based services waiver programs, final task 2 report. RTI International.

Young, H.M., Kurtzman, E., Roes, M., Toles, M., Ammerman, A., & Pace, D. (2011). Measurement opportunities & gaps: Transitional care processes and outcomes among adult recipients of long-term services and supports. Long Term Quality Alliance, Quality Measurement Workgroup.

[Response Ends]

1b.02. Provide performance scores on the measure as specified (current and over time) at the specified level of analysis.

Include mean, std dev, min, max, interquartile range, and scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include. This information also will be used to address the sub-criterion on improvement (4b) under Usability and Use.

[Response Begins]

AHCA has been calculating and tracking rehospitalizations for all SNFs nationally for data from 2011 and updating results each quarter. Below are the basic statistics for the measure from the most recent data available; care through the 4th quarter of 2020.

Statistics	2019q4 (Pre-COVID)	2020q4
N	13,799	13,328
Risk Adjusted Mean Rate	16.6%	16.3%
Standard Deviation	4.9%	5.2%
Min-Max	0-58.7%	0-81.9%

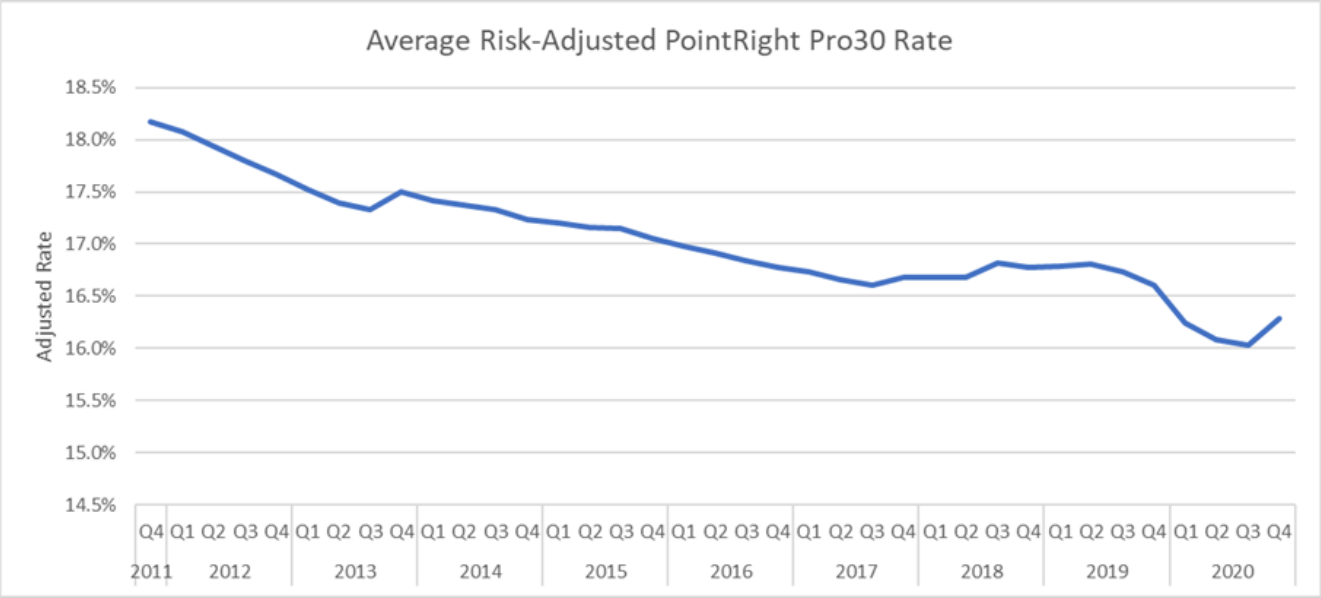
Recent Pro30 Statistics

The distribution of the SNFs with reportable data is as follows:

Risk-Adjusted Rate Range	2019q4 (Pre-COVID)		2020q4	*
*	#	%	#	%
0-<5%	95	0.7%	170	1.3%
5-<10%	968	7.0%	1,208	9.1%
10-<15%	4,115	29.8%	4,047	30.4%
15-<20%	5,575	40.4%	4,948	37.1%
20-<25%	2,374	17.2%	2,316	17.4%
25-<30%	553	4.0%	531	4.0%
30-35%	94	0.7%	97	0.7%
>=35%	25	0.2%	11	0.1%

* Cell intentionally left empty

In addition, all AHCA member facilities have access to their own rehospitalization rate updated each quarter through AHCA's Quality Dashboard (Long Term Care Trend Tracker). The national trends have shown a steady decline in the overall rate from fourth quarter of 2011 to the third quarter of 2020. There was a slight uptick in the national average rate for the fourth quarter of 2020, which could be related to the COVID pandemic. With the most recent uptick, there has still been an average improvement of 10.4% from the fourth quarter of 2011 to the fourth quarter of 2020., with the average improvement by state varying (see below).



National Trend of Risk-Adjusted Average Pro30

State	2011-Q4 Rate	2020-Q4 Rate	% Change	Facilities
Nation	18.2%	16.3%	-10.4%	13,328
AK	13.1%	10.0%	-23.5%	6
AL	17.8%	16.5%	-7.3%	201
AR	20.1%	16.5%	-17.8%	200
AZ	18.6%	15.5%	-16.5%	132
CA	17.6%	15.9%	-9.9%	1,028
CO	14.0%	12.5%	-11.1%	171
CT	17.5%	16.0%	-8.7%	200
DC	17.4%	13.1%	-24.7%	14
DE	19.0%	16.3%	-14.4%	37
FL	20.0%	18.3%	-8.8%	687
GA	19.0%	15.9%	-16.6%	323
HI	12.6%	11.8%	-6.4%	32
IA	16.7%	13.9%	-16.6%	273
ID	11.9%	12.0%	0.9%	64
IL	20.9%	18.2%	-12.9%	635
IN	17.4%	16.0%	-8.1%	477
KS	16.8%	15.5%	-7.8%	191
KY	18.8%	16.6%	-11.9%	260
LA	23.3%	19.2%	-17.5%	252
MA	16.4%	16.8%	2.6%	346

State	2011-Q4 Rate	2020-Q4 Rate	% Change	Facilities
MD	19.6%	15.4%	-21.6%	211
ME	15.2%	12.8%	-15.9%	76
MI	18.6%	16.5%	-11.4%	414
MN	16.0%	17.2%	8.0%	275
MO	19.2%	17.8%	-7.4%	404
MS	21.5%	20.0%	-7.3%	171
MT	12.8%	11.7%	-9.1%	37
NC	18.6%	15.3%	-17.9%	403
ND	14.3%	13.7%	-4.5%	37
NE	15.8%	15.0%	-5.6%	110
NH	15.6%	14.6%	-6.8%	64
NJ	20.6%	18.1%	-12.3%	343
NM	15.7%	14.4%	-8.4%	60
NV	17.9%	16.2%	-9.6%	52
NY	18.4%	15.1%	-17.7%	580
OH	18.0%	17.1%	-5.0%	868
OK	20.2%	17.8%	-11.9%	200
OR	16.8%	14.0%	-16.7%	108
PA	17.7%	15.3%	-13.6%	656
RI	19.8%	15.6%	-21.4%	72
SC	17.9%	17.1%	-4.7%	180
SD	12.6%	13.4%	6.3%	59
TN	18.0%	15.6%	-13.6%	295
TX	19.2%	17.7%	-8.2%	1,034
UT	11.8%	12.2%	3.3%	80
VA	18.1%	15.5%	-14.4%	267
VT	13.2%	14.0%	6.2%	25
WA	16.4%	13.8%	-15.6%	185
WI	15.5%	15.5%	-0.5%	319
WV	18.2%	15.2%	-16.1%	98
WY	13.0%	10.7%	-17.3%	19

State average Pro30 Rates from 2011 to 2020 and percent change

[Response Ends]

1b.03. If no or limited performance data on the measure as specified is reported above, then provide a summary of data from the literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement. Include citations.

[Response Begins]

N/A

[Response Ends]

1b.04. Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability.

Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included. Include mean, std dev, min, max, interquartile range, and scores by decile. For measures that show high levels of performance, i.e., "topped out", disparities data may demonstrate an opportunity for improvement/gap in care for certain sub-populations. This information also will be used to address the sub-criterion on improvement (4b) under Usability and Use.

[Response Begins]

The measure reflects the entire population of individuals admitted to a SNF following a hospitalization. It includes all race and ethnicities regardless of payer status. Nationally, 76% of all nursing home residents are classified as White, 14% as African American, and 2% as Asian (see table below for fully breakdown in 2020).

Race/Ethnicity Makeup of SNF Residents (2020q1-2020q4)

SNFs	Residents	White	African American	Asian	Hispanic	Native American/ Hawaii Pacific Islander
15,715	3,739,243	75.8%	13.7%	2.0%	5.6%	0.4%

SNF Resident Race and Ethnicity in 2020

Stratifying the measure by race and ethnicity would result in most providers having inadequate sample size to report a rehospitalization rate. Also, the measure is an all-cause readmission measure, intended to capture the overall performance of each SNF.

When we categorize facilities by their percent of minority residents, we find that facilities with fewer minorities have lower risk adjusted Pro30 readmission rates. The difference in the average readmission rate between facilities with low (<5%) and high (>=35%) percentage of minorities has decreased over time. In 2011-Q4, the difference was 4.1 percentage points. In 2020-Q4, the difference was 2.8 percentage points (See table below).

Facility-Level Race/Ethnicity x Pro30 Rehospitalization Rate

Facility Categorization of Minority Race/Ethnicity	SNF Count	Average Risk-Adjusted Pro30 Readmission Rate	*
*	*	2011-Q4	2020-Q4
Low (<5%)	5,313 (34%)	16.5%	14.9%
Medium-Low (5-14.9%)	3,608 (23%)	18.0%	16.3%
Medium-High (15-34.9%)	3,284 (21%)	19.3%	17.1%
High (>=35%)	3,243 (21%)	20.6%	17.7%

* Cell intentionally left empty

Facility-level Minority Race/Ethncity and Average Pro30 Rate in 2011 and 2020

A similar pattern is seen when we look at a facility's geographic location relative to the CDC's Social Vulnerability Index (SVI). The SVI evaluates the relative social vulnerability of counties across the United States using 15 different measures of vulnerability in 4 different themes: socioeconomic status, household composition & disability, minority status &

language, and housing type & transportation. For every measure, if a county is above the 90th percentile (i.e. in the most vulnerable 10%), it is given a flag.

Facilities located in lower SVI counties had lower risk adjusted Pro30 readmission rates. The difference in the average readmission rate between facilities in low (0 flags) and high (>= 4 flags) SVI counties has decreased over time. In 2011-Q4, the difference was 2.7 percentage points. In 2020-Q4, the difference was 1.4 percentage points (See table below).

County-Level Social Vulnerability Index (SVI) x Pro30 Rehospitalization Rate

Facility Categorization by County SVI	SNF Count	Average Risk-Adjusted Pro30 Readmission Rate	*
*	*	2011-Q4	2020-Q4
Low (0 Flags)	5,335 (35%)	17.4%	15.8%
Medium-Low (1 Flag)	3,861 (25%)	17.9%	16.1%
Medium-High (2-3 Flags)	3,317 (22%)	18.9%	16.8%
High (>=4 Flags)	2,699 (18%)	20.1%	17.2%

* Cell intentionally left empty

Facility County SVI and Average Pro30 Rates in 2011 and 2020

In 2016, Pro30 was part of NQF's Socio-Demographic Status (SDS) Trial Period project. During this project, three patient-level sociodemographic variables (marital status, race [black or non-black], and Medicaid enrollment) were analyzed. None of these variables markedly improved the validity of the risk model. Thus, it was agreed to keep them out. A memo summarizing the results of this analysis is attached in the appendix.

[Response Ends]

1b.05. If no or limited data on disparities from the measure as specified is reported above, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations. Not necessary if performance data provided in above.

[Response Begins]

A lot of articles in the literature address disparities in long term care but not for residents receiving short post-acute care services. Two articles focus on ethnic disparities related to hospitalizations (Li, 2011; Grunier, 2008). In the first study using national MDS data from 2008, the authors found that the 30 day rehospitalization rates were 14.3% for white patients (n = 865,993) and 18.6% for black patients (n = 94,651). Both patient and admitting facility characteristics accounted for a considerable portion of overall racial disparities, but disparities persisted after multivariable adjustments overall and in patient subgroup (Li, 2011). However, this study did not compare within- facility and between-facility disparities. Within-facility disparities are those where disparities exist between Blacks and Whites in the same facilities and between-facility disparities are those where disparities exist between facilities with different racial composition (i.e. facilities with higher minority populations have poorer care quality than facilities with mostly white populations). Based on previous research related to racial disparities in SNFs, it is expected that disparities in rehospitalization would exist between facilities.

In the second article, hospitalization rates for long stay residents on Medicaid were examined (short stay residents were not included) (Grunier, 2008). In this study, using MDS data to look at long stay residents, 18.5% of white and 24.1% of black residents were hospitalized. Residents in nursing homes with high concentrations of blacks had 20% higher odds (95 percent confidence interval [CI]=1.15-1.25) of hospitalization than residents in nursing homes with no blacks. Ten-dollar increments in Medicaid rates reduced the odds of hospitalization by 4 percent (95 percent CI=0.93-1.00) for white residents and 22 percent (95 percent CI=0.69-0.87) for black residents.

Multiple studies in the past twenty years have examined racial disparities in the care of SNF residents and have consistently found poorer care in facilities with high minority populations (Fennell et al., 2000; Mor et al., 2004; Smith et al., 2007). Work on disparities in quality of care between elderly white and black residents within SNFs has shown clearly that nursing homes remain relatively segregated, and that nursing home care can be described as a tiered system in

which blacks are concentrated in marginal-quality homes (Mor et al., 2004). Such homes tend to have serious deficiencies in staffing ratios, performance, and are more financially vulnerable (Smith et al, 2007; Chisholm et al., 2013). Based on a review of the SNF disparities literature, Konetzka and Werner (2009) concluded that disparities in care are likely related to racial and socioeconomic segregation as opposed to within-provider discrimination. This conclusion is supported, for example, by Grunier and colleagues who found that as the proportion of black residents in the nursing home increased the risk of hospitalization among all residents, regardless of race, also increased (Grunier et al., 2008). Rehospitalization risk likely also increases as the proportion of black residents increases, indicating that the best measure of racial disparities in rates of rehospitalization is one that measures rehospitalization at the facility level.

The sample size for African Americans divided across all the SNFs would make most SNFs unable to report a rate stratified by race. African American ethnicity is the next largest ethnicity after White.

Cai, S., Mukamel, D., & Temkin-Greener, H. (2010). Pressure ulcer prevalence among black and white nursing home residents in New York state: Evidence of racial disparity? Medical Care 48(3), 233-239.

Chisholm, L., Weech-Maldonado, R., Laberge, A., Lin, F. C., & Hyer, K. (2013). Nursing Home Quality and Financial Performance: Does the Racial Composition of Residents Matter?. Health services research.

Fennell, M. L., Miller, S. C., & Mor, V. (2000). Facility effects on racial differences in nursing home quality of care. American Journal of Medical Quality, 15(4), 174-181.

Grabowski, D.C. (2004). The admission of Blacks to high-deficiency nursing homes. Medical Care 42(5): 456-464.

Gruneir, A., Miller, S. C., Feng, Z., Intrator, O., & Mor, V. (2008). Relationship between state Medicaid policies, nursing home racial composition, and the risk of hospitalization for black and white residents. Health Services Research, 43(3), 869-881.

Konetzka, R. T., & Werner, R. M. (2009). Review: Disparities in long-term care building equity into market-based reforms. Medical Care Research and Review, 66(5), 491-521.

Li, Y., Glance, L.G., Yin, J.,& Mukamel, D.B (2011). Racial disparities in rehospitalization among Medicare patients in skilled nursing facilities. American Journal of Public Health, 101 (5), 875-882.

Mor, V., Papandanatos, G., & Miller, S.C. (2005). End-of –life hospitalization for African American and non-Latino White nursing home residents: Variation by race and a facility's racial composition. Journal of Palliative Medicine, 8(1): 58-68.

Mor, V., Zinn, J., Angelelli, J., Teno, J. M., & Miller, S. C. (2004). Driven to tiers: socioeconomic and racial disparities in the quality of nursing home care. Milbank Quarterly, 82(2), 227-256.

Smith, D. B., Feng, Z., Fennell, M. L., Zinn, J. S., & Mor, V. (2007). Separate and unequal: racial segregation and disparities in quality across US nursing homes. Health Affairs, 26(5): 1448-1458.

[Response Ends]

Criteria 2: Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. Measures must be judged to meet the sub criteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.

spma.01. Indicate whether there are changes to the specifications since the last updates/submission. If yes, update the specifications in the Measure Specifications section of the Measure Submission Form, and explain your reasoning for the changes below.

[Response Begins]

No

[Response Ends]

spma.02. Briefly describe any important changes to the measure specifications since the last measure update and provide a rationale.

For annual updates, please explain how the change in specifications affects the measure results. If a material change in specification is identified, data from re-testing of the measure with the new specifications is required for early maintenance review.

For example, specifications may have been updated based on suggestions from a previous NQF CDP review.

[Response Begins]

N/A

[Response Ends]

sp.01. Provide the measure title.

Measure titles should be concise yet convey who and what is being measured (see What Good Looks Like).

[Response Begins]

PointRight ® Pro 30™

[Response Ends]

sp.02. Provide a brief description of the measure.

Including type of score, measure focus, target population, timeframe, (e.g., Percentage of adult patients aged 18-75 years receiving one or more HbA1c tests per year).

[Response Begins]

PointRight Pro-30 is an all-cause, risk adjusted rehospitalization measure. It provides the rate at which a patient (regardless of payer status or diagnosis) who enters a skilled nursing facility (SNF) from an acute hospital and is subsequently rehospitalized during their SNF stay, within 30 days from their admission to the SNF.

[Response Ends]

sp.04. Check all the clinical condition/topic areas that apply to your measure, below.

Please refrain from selecting the following answer option(s). We are in the process of phasing out these answer options and request that you instead select one of the other answer options as they apply to your measure.

Please do not select:

- *Surgery: General*

[Response Begins]

Other (specify)

N/A

[Response Ends]

sp.05. Check all the non-condition specific measure domain areas that apply to your measure, below.

[Response Begins]

Care Coordination: Readmissions

Care Coordination: Transitions of Care

[Response Ends]

sp.06. Select one or more target population categories.

Select only those target populations which can be stratified in the reporting of the measure's result.

Please refrain from selecting the following answer option(s). We are in the process of phasing out these answer options and request that you instead select one of the other answer options as they apply to your measure.

Please do not select:

- *Populations at Risk: Populations at Risk*

[Response Begins]

Elderly (Age >= 65)

[Response Ends]

sp.07. Select the levels of analysis that apply to your measure.

Check ONLY the levels of analysis for which the measure is SPECIFIED and TESTED.

Please refrain from selecting the following answer option(s). We are in the process of phasing out these answer options and request that you instead select one of the other answer options as they apply to your measure.

Please do not select:

- *Clinician: Clinician*
- *Population: Population*

[Response Begins]

Facility

[Response Ends]

sp.08. Indicate the care settings that apply to your measure.

Check ONLY the settings for which the measure is SPECIFIED and TESTED.

[Response Begins]

Post-Acute Care

[Response Ends]

sp.09. Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials.

Do not enter a URL linking to a home page or to general information. If no URL is available, indicate "none available".

[Response Begins]

https://www.ahcancal.org/Data-and-Research/Documents/Rehospitalization%20Help%20Doc.pdf

[Response Ends]

sp.11. Attach the data dictionary, code table, or value sets (and risk model codes and coefficients when applicable). Excel formats (.xlsx or .csv) are preferred.

Attach an excel or csv file; if this poses an issue, contact staff . Provide descriptors for any codes. Use one file with multiple worksheets, if needed.

[Response Begins]

No data dictionary/code table – all information provided in the submission form

[Response Ends]

For the question below: state the outcome being measured. Calculation of the risk-adjusted outcome should be described in sp.22.

sp.12. State the numerator.

Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome).

DO NOT include the rationale for the measure.

[Response Begins]

The numerator is the number of patients sent back to any acute care hospital (excluding emergency room only visits) during their SNF stay within 30 days from a SNF admission, as indicated on the MDS 3.0 discharge assessment during a 12 month measurement period.

[Response Ends]

For the question below: describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in sp.22.

sp.13. Provide details needed to calculate the numerator.

All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, time period for data collection, specific data collection items/responses, code/value sets.

Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at sp.11.

[Response Begins]

The numerator is the number of patients that are discharged from a SNF to an acute hospital within 30 days of entry from an acute hospital as indicated by MDS item A2100=03 (indicating 'discharge to acute hospitals') and MDS item A0310F=10/11 (indicating discharge status). The length of stay before rehospitalization is calculated by subtracting MDS item A1600 (entry date) from MDS item A2000 (discharge date).

[Response Ends]

For the question below: state the target population for the outcome. Calculation of the risk-adjusted outcome should be described in sp.22.

sp.14. State the denominator.

Brief, narrative description of the target population being measured.

[Response Begins]

The denominator is the number of all admissions, regardless of payer status and diagnosis, with an MDS 3.0 admission assessment to a SNF from an acute hospital during the 12 month measurement period.

[Response Ends]

For the question below: describe how the target population is identified. Calculation of the risk-adjusted outcome should be described in sp.22.

sp.15. Provide details needed to calculate the denominator.

All information required to identify and calculate the target population/denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets.

Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at sp.11.

[Response Begins]

The total number of admissions to the facility, from an acute hospital, during the 12 month measurement period is determined using the MDS item A1800=03, indicating 'entered from hospital'. The entry date is determined using two MDS variables: A1600 (entry date) and A0310F=01 (indicating entry tracking record').

[Response Ends]

sp.16. Describe the denominator exclusions.

Brief narrative description of exclusions from the target population.

[Response Begins]

Individuals with incomplete MDS assessments are excluded. Payer status and clinical conditions are not used for any exclusions.

[Response Ends]

sp.17. Provide details needed to calculate the denominator exclusions.

All information required to identify and calculate exclusions from the denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at sp.11.

[Response Begins]

Admissions that do not have either a discharge assessment or a quarterly (annual or change of status) assessment within 120 days of admissions are excluded, as they are considered incomplete.

[Response Ends]

sp.18. Provide all information required to stratify the measure results, if necessary.

Include the stratification variables, definitions, specific data collection items/responses, code/value sets, and the risk-model covariates and coefficients for the clinically-adjusted version of the measure when appropriate. Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format in the Data Dictionary field.

[Response Begins]

N/A

[Response Ends]

sp.19. Select the risk adjustment type.

Select type. Provide specifications for risk stratification and/or risk models in the Scientific Acceptability section.

[Response Begins]

Statistical risk model

[Response Ends]

sp.20. Select the most relevant type of score.

Attachment: If available, please provide a sample report.

[Response Begins]

Rate/proportion

[Response Ends]

sp.21. Select the appropriate interpretation of the measure score.

Classifies interpretation of score according to whether better quality or resource use is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score

[Response Begins]

Better quality = Lower score

[Response Ends]

sp.22. Diagram or describe the calculation of the measure score as an ordered sequence of steps.

Identify the target population; exclusions; cases meeting the target process, condition, event, or outcome; time period of data, aggregating data; risk adjustment; etc.

[Response Begins]

The formula for a facility's adjusted rehospitalization rate is as follows:

(Observed Rate of Rehospitalization within 30 days) / (Expected Rate of Rehospitalization within 30 days) * (National rate).

Note- the national rate is updated annually, while the observed and expected rates are updated quarterly.

1. Observed Rate Calculation

The formula for a facility's observed Rehospitalization rate is as follows:

(Observed count of discharges to hospitals within 30 days of admission) / (Observed count of admissions from hospitals)

The denominator is the number of any admissions from a hospital during the 12 month measurement period. (This is a count of events, not of residents.)

The numerator is the number of all admissions to the SNF during the 12 month measurement period who then went back to the hospital within 30 days of their admission date. (This is a count of events, not of residents.)

2. Expected Rate Calculation

2.1 First the expected rate for every single resident admission is calculated using the formula below.

The calculation must be performed at least 45 days after the end of the target 12-month measurement period. This is to allow 30 days to elapse to capture rehospitalizations that occur from admission to the SNF on the last day of the target period and another 14 days to allow facilities to submit data to CMS. We recommend waiting an additional 2 to 3 weeks to ensure maximum data availability for MDS assessments not submitted during the 14 day period.

VARIABLE CALCULATION

Intercept: -2.9736

Age Under 65: if age<65 then Variable=1; else Variable=0; (If Date of Birth is missing, then Variable=0)

End Stage Prognosis: if J1400=1 then Variable=1; else Variable=0;

Hospice Care: if O0100K2=1 then Variable=1; else Variable=0;

Male: if A0800=1 then Variable=1; else Variable=0;

Medicare: if A0310B = 01 or 06, then Variable=1; else Variable=0;

SNF Admission is Return to Same SNF Following Hospitalization: if A0310B=06 AND A1600 minus A2000 (on a previous MDS where A2100=3) < 30 then Variable=1; else if A1700=2 then Variable=1; else Variable=0;

Diagnoses

Anemia: if I0200=1 then Variable=1; else Variable=0;

Asthma: if I6200=1 then Variable=1; else Variable=0;

Diabetes Mellitus: if I2900=1 then Variable=1; else Variable=0;

Diabetic Foot Ulcer: if M1040B=1 then Variable=1; else Variable=0;

Pressure Ulcer Stage 2: if M0300B2>0 then Variable=1; else Variable=0;

Pressure Ulcer Stage 3: if M0300C2>0 then Variable=1; else Variable=0;

Pressure Ulcer Stage 4: if M0300D2>0 then Variable=1; else Variable=0;

Pressure Ulcer Unstageable: if M0300E2>0 or M0300F2>0 or M0300G2>0 then Variable=1; else Variable=0;

Respiratory Failure: if I6300=1 then Variable=1; else Variable=0;

Septicemia: if I2100=1 then Variable=1; else Variable=0;

Vascular Ulcer: if M1030>0 then Variable=1; else Variable=0;

Viral Hepatitis: if I2400=1 then Variable=1; else Variable=0;

Heart Failure: if I0600=1 then Variable=1; else Variable=0;

Internal Bleeding: if J1550D=1 then Variable=1; else Variable=0;

Functional Status

Daily Pain: if J0400=1 or J0850=3 then Variable=1; else Variable=0;

Eating Dependence-Total: if G0110H1 = 4,7, or 8, then Variable=1; else Variable=0;

Two Person assist Needed with One or More ADLs: if G0110A2=3 or G0110B2=3 or G0110C2=3 or G0110D 2=3 or G0110E2=3 or G0110F2=3 or G0110G2=3 or G0110H2=3 or G0110I2=3 or G0110J2=3 then Variable=1; else Variable=0;

Cognition not Completely Intact: if C0100=1 AND if C0500=15 then Variable=0;

if C0100=1 AND if C0500 <>15 then Variable=1;if C0100=0 AND if C0700=0 AND C0800=0 AND C1000=0 AND C0900A=1 AND C0900B=1 AND C0900C=1 AND C0900D=1 then Variable=0; else Variable=1;

Total Bowel Incontinence: if H0400>0 then Variable=1; else Variable=0;

Treatment

Cancer Chemotherapy: if O0100A1=1 then Variable=1; else Variable=0;

Dialysis: if O0100J1=1 then Variable=1; else Variable=0;

Insulin: if N0350A>0 or N0350B>0 then Variable=1; else Variable=0;

IV Medications Continuing from Hospital: if O0100H1=1 and O0100H2=1 then Variable=1; else Variable=0;

Ostomy Care: if H0100C=1 then Variable=1; else Variable=0;

Oxygen Continuing from Hospital: if O0100C1=1 and O0100C2=1 then Variable=1; else Variable=0;

Radiation Therapy: if O0100B1=1 then Variable=1; else Variable=0;

Tracheostomy Continuing from Hospital: if O0100E1=1 and O0100E2=1 then Variable=1; else Variable=0;

FORMULA

LogOdds = - 2.8252

- 0.7846 * End Stage Prognosis

- 1.5085 * Hospice_care

+ 0.0923 * Anemia

+ 0.1033 * Asthma

+ 0.0611 * Daily Pain

+ 0.0462 * Diabetes_Mellitus

+ 0.1459 * Diabetic Foot Ulcer

+ 0.6038 * Dialysis

+ 0.1777 * Insulin

+ 0.3263 * Ostomy Care

+ 0.1670 * Pressure Ulcer Stage 2

+ 0.1334 * Pressure Ulcer Stage 3

+ 0.1569 * Pressure Ulcer Stage 4

+ 0.1810 * Pressure Ulcer Unstageable

+ 0.0891 * Septicemia

+ 0.1848 * Total Bowel Incontinence

+ 0.1862 * Venous Arterial Ulcer

+ 0.4017 * Viral Hepatitis

+ 0.1770 * Age Under 65

+ 0.6001 * Cancer Chemotherapy

+ 0.1880 * IV Medication Continued from Hospital

+ 0.3395 * Oxygen Continuing from Hospital

+ 0.1336 * Tracheostomy Continuing from Hospital

+ 0.4718 * Eating Dependency

+ 0.2004 * Heart Failure

+ 0.8920 * Internal Bleeding

+ 0.1622 * Male

+ 0.1400 * Return to Same SNF Following Hospitalizations

+ 0.5543 * Medicare

+ 0.2389 * Two Person Assist Required for One or More ADLs

+ 0.6111 * Radiation Therapy

+ 0.1159 * Respiratory Failure

+ 0.3327 * Cognition Not Completely Intact

30day_Rehospitalization_Probability= 1/(1+exp(-LogOdds))

2.2 Once the above calculation is performed for all admissions within the measurement period, the results are averaged to obtain the facility's expected rate of rehospitalization. Hence, the expected rate for a facility is the average of the expected rehospitalization probabilities for each admission during the target time period.

Procedure for Calculating the Measure

1. Establish the 12 month time period and collect all assessments with entry dates that fall within the time period. The count of these entries is the observed denominator.
2. For each entry date, determine whether the resident was discharged back to an acute hospital within 30 days of the entry date. The count of these discharges is the observed numerator.
3. Divide the numerator by the denominator to obtain the observed rate for the SNF.
4. Calculate the expected rate for the facility using the expected probability model for admissions during the sample period, then average them for the 12-month period.
5. Divide the observed rate by the expected rate and multiply by the national average rate to obtain the adjusted all cause rehospitalization rate for the facility.

[Response Ends]

sp.25. If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.

[Response Begins]

N/A

[Response Ends]

sp.28. Select only the data sources for which the measure is specified.

[Response Begins]

Assessment Data

[Response Ends]

sp.29. Identify the specific data source or data collection instrument.

For example, provide the name of the database, clinical registry, collection instrument, etc., and describe how data are collected.

[Response Begins]

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[Response Ends]

sp.30. Provide the data collection instrument.

[Response Begins]

Available in attached appendix in Question 1 of the Additional Section

[Response Ends]

2a. Reliability

2ma.01. Indicate whether additional empirical reliability testing at the accountable entity level has been conducted. If yes, please provide results in the following section, Scientific Acceptability: Reliability - Testing. Include information on all testing conducted (prior testing as well as any new testing).

Please separate added or updated information from the most recent measure evaluation within each question response in the Scientific Acceptability sections. For example:

Current Submission:

Updated testing information here.

Previous Submission:

Testing from the previous submission here.

[Response Begins]

No

[Response Ends]

2ma.02. Indicate whether additional empirical reliability testing at the accountable entity level has been conducted. If yes, please provide results in the following section, Scientific Acceptability: Validity - Testing. Include information on all testing conducted (prior testing as well as any new testing).

Please separate added or updated information from the most recent measure evaluation within each question response in the Scientific Acceptability sections. For example:

Current Submission:

Updated testing information here.

Previous Submission:

Testing from the previous submission here.

[Response Begins]

Yes

[Response Ends]

2ma.03. For outcome, patient-reported outcome, resource use, cost, and some process measures, risk adjustment/stratification may be conducted. Did you perform a risk adjustment or stratification analysis?

[Response Begins]

No

[Response Ends]

2ma.04. For maintenance measures in which risk adjustment/stratification has been performed, indicate whether additional risk adjustment testing has been conducted since the most recent maintenance evaluation. This may include updates to the risk adjustment analysis with additional clinical, demographic, and social risk factors.

Please update the Scientific Acceptability: Validity - Other Threats to Validity section.

Note: This section must be updated even if social risk factors are not included in the risk adjustment strategy.

[Response Begins]

No additional risk adjustment analysis included

[Response Ends]

Measure testing must demonstrate adequate reliability and validity in order to be recommended for endorsement. Testing may be conducted for data elements and/or the computed measure score. Testing information and results should be entered in the appropriate fields in the Scientific Acceptability sections of the Measure Submission Form.

• Measures must be tested for all the data sources and levels of analyses that are specified. If there is more than one set of data specifications or more than one level of analysis, contact NQF staff about how to present all the testing information in one form.

• All required sections must be completed.

• For composites with outcome and resource use measures, Questions 2b.23-2b.37 (Risk Adjustment) also must be completed.

• If specified for multiple data sources/sets of specifications (e.g., claims and EHRs), Questions 2b.11-2b.13 also must be completed.

• An appendix for supplemental materials may be submitted (see Question 1 in the Additional section), but there is no guarantee it will be reviewed.

• Contact NQF staff with any questions. Check for resources at the

Submitting Standards webpage .

• For information on the most updated guidance on how to address social risk factors variables and testing in this form refer to the release notes for the

2021 Measure Evaluation Criteria and Guidance .

Note: The information provided in this form is intended to aid the Standing Committee and other stakeholders in understanding to what degree the testing results for this measure meet NQF's evaluation criteria for testing.

2a. Reliability testing demonstrates the measure data elements are repeatable, producing the same results a high proportion of the time when assessed in the same population in the same time period and/or that the measure score is precise. For instrument-based measures (including PRO-PMs) and composite performance measures, reliability should be demonstrated for the computed performance score.

2b1. Validity testing demonstrates that the measure data elements are correct and/or the measure score correctly reflects the quality of care provided, adequately identifying differences in quality. For instrument based measures (including PRO-PMs) and composite performance measures, validity should be demonstrated for the computed performance score.

2b2. Exclusions are supported by the clinical evidence and are of sufficient frequency to warrant inclusion in the specifications of the measure;

AND

If patient preference (e.g., informed decision-making) is a basis for exclusion, there must be evidence that the exclusion impacts performance on the measure; in such cases, the measure must be specified so that the information about patient preference and the effect on the measure is transparent (e.g., numerator category computed separately, denominator exclusion category computed separately).

2b3. For outcome measures and other measures when indicated (e.g., resource use):

• an evidence-based risk-adjustment strategy (e.g., risk models, risk stratification) is specified; is based on patient factors (including clinical and social risk factors) that influence the measured outcome and are present at start of care; 14,15 and has demonstrated adequate discrimination and calibration

OR

• rationale/data support no risk adjustment/ stratification.

2b4. Data analysis of computed measure scores demonstrates that methods for scoring and analysis of the specified measure allow for identification of statistically significant and practically/clinically meaningful 16 differences in performance;

OR

there is evidence of overall less-than-optimal performance.

2b5. If multiple data sources/methods are specified, there is demonstration they produce comparable results.

2b6. Analyses identify the extent and distribution of missing data (or nonresponse) and demonstrate that performance results are not biased due to systematic missing data (or differences between responders and non-responders) and how the specified handling of missing data minimizes bias.

2c. For composite performance measures, empirical analyses support the composite construction approach and demonstrate that:

2c1. the component measures fit the quality construct and add value to the overall composite while achieving the related objective of parsimony to the extent possible; and

2c2. the aggregation and weighting rules are consistent with the quality construct and rationale while achieving the related objective of simplicity to the extent possible.

(if not conducted or results not adequate, justification must be submitted and accepted)

Definitions

Reliability testing applies to both the data elements and computed measure score. Examples of reliability testing for data elements include, but are not limited to: inter-rater/abstractor or intra-rater/abstractor studies; internal consistency for multi-item scales; test-retest for survey items. Reliability testing of the measure score addresses precision of measurement (e.g., signal-to-noise).

Validity testing applies to both the data elements and computed measure score. Validity testing of data elements typically analyzes agreement with another authoritative source of the same information. Examples of validity testing of the measure score include, but are not limited to: testing hypotheses that the measures scores indicate quality of care, e.g., measure scores are different for groups known to have differences in quality assessed by another valid quality measure or method; correlation of measure scores with another valid indicator of quality for the specific topic; or relationship to conceptually related measures (e.g., scores on process measures to scores on outcome measures). Face validity of the measure score as a quality indicator may be adequate if accomplished through a systematic and transparent process, by identified experts, and explicitly addresses whether performance scores resulting from the measure as specified can be used to distinguish good from poor quality. The degree of consensus and any areas of disagreement must be provided/discussed.

Examples of evidence that an exclusion distorts measure results include, but are not limited to: frequency of occurrence, variability of exclusions across providers, and sensitivity analyses with and without the exclusion.

Patient preference is not a clinical exception to eligibility and can be influenced by provider interventions.

Risk factors that influence outcomes should not be specified as exclusions.

With large enough sample sizes, small differences that are statistically significant may or may not be practically or clinically meaningful. The substantive question may be, for example, whether a statistically significant difference of one percentage point in the percentage of patients who received smoking cessation counseling (e.g., 74 percent v. 75 percent) is clinically meaningful; or whether a statistically significant difference of $25 in cost for an episode of care (e.g., $5,000 v.$5,025) is practically meaningful. Measures with overall less-than-optimal performance may not demonstrate much variability across providers.

Please separate added or updated information from the most recent measure evaluation within each question response in the Importance to Scientific Acceptability sections. For example:

2021 Submission:

Updated testing information here.

2018 Submission:

Testing from the previous submission here.

2a.01. Select only the data sources for which the measure is tested.

[Response Begins]

Assessment Data

[Response Ends]

2a.02. If an existing dataset was used, identify the specific dataset.

The dataset used for testing must be consistent with the measure specifications for target population and healthcare entities being measured; e.g., Medicare Part A claims, Medicaid claims, other commercial insurance, nursing home MDS, home health OASIS, clinical registry).

[Response Begins]

Resident Assessment Instrument Minimum Data Set (MDS) version 3.0

[Response Ends]

2a.03. Provide the dates of the data used in testing.

Use the following format: "MM-DD-YYYY - MM-DD-YYYY"

[Response Begins]

01-01-2011 - 12-31-2012

[Response Ends]

2a.04. Select the levels of analysis for which the measure is tested.

Testing must be provided for all the levels specified and intended for measure implementation, e.g., individual clinician, hospital, health plan.

Please refrain from selecting the following answer option(s). We are in the process of phasing out these answer options and request that you instead select one of the other answer options as they apply to your measure.

Please do not select:

- *Clinician: Clinician*
- *Population: Population*

[Response Begins]

Facility

[Response Ends]

2a.05. List the measured entities included in the testing and analysis (by level of analysis and data source).

Identify the number and descriptive characteristics of measured entities included in the analysis (e.g., size, location, type); if a sample was used, describe how entities were selected for inclusion in the sample.

[Response Begins]

Initial, testing was completed on 2,800 facilities to verify the calculations. Subsequent analyses were conducted on the national MDS database for all Medicare certified SNFs in the country. Presented below is summary information on the number and types of SNFs nationally in 2011 and 2012.

TABLE 1. Number and Types of SNFs

Ownership Category	2011	2012
Number of SNFs	15,693	15,690
For –Profit	10,758	10,832
Not-for-Profit	4,030	3,968
Government	905	890

*Data from AHCA Quality Report 2013, based on CMS OSCAR data.

[Response Ends]

2a.06. Identify the number and descriptive characteristics of patients included in the analysis (e.g., age, sex, race, diagnosis), separated by level of analysis and data source; if a sample was used, describe how patients were selected for inclusion in the sample.

If there is a minimum case count used for testing, that minimum must be reflected in the specifications.

[Response Begins]

Data reported from 2012 shows that there were 2,452,848 Medicare admissions and 798,513 Non-Medicare admissions to SNFs. The table below provides a breakdown of the descriptive characteristics of these patients.

TABLE 2. Characteristics of Patients

Characteristic	Characteristic Category	Medicare Admissions	Non-Medicare Admissions
Age	Under 65	10.6%	26.3%
^	Age 65-84	53.7%	43.1%
^	85 and Older	35.8%	30.6%
^	Average Age	78.8	74.4
Gender	Male	37.7%	39.6%
^	Female	62.3%	60.4%
Bed Mobility	Independent	4.8%	9.8%
^	Supervision/Limited Assistance	22.3%	23.8%
^	Extensive Assistance/Total Dependence	72.7%	66.4%

Characteristic	Characteristic Category	Medicare Admissions	Non-Medicare Admissions
Transfer	Independent	2.5%	6.7%
^	Supervision/Limited Assistance	23.5%	25.1%
^	Extensive Assistance/Total Dependence	73.9%	68.1%
Eating	Independent	34.2%	34.9%
^	Supervision/Limited Assistance	47.7%	47.2%
^	Extensive Assistance/Total Dependence	18%	17.9%
Toilet Use	Independent	2.5%	5.9%
^	Supervision/Limited Assistance	20.9%	21.7%
^	Extensive Assistance/Total Dependence	76.5%	72.3%
Bathing	Independent	1.3%	2.1%
^	Supervision/Limited Assistance	9.6%	10.9%
^	Extensive Assistance/Total Dependence	88.8%	86.7%
Race/Ethnicity	American Indian	0.0%	0.0%
^	Asian	2.7%	3.4%
^	Black	10.0%	13.1%
^	Hispanic	3.8%	6.2%

Characteristic	Characteristic Category	Medicare Admissions	Non-Medicare Admissions
^	White	82.1%	75.2%
^	Native Hawaiian or Pacific Islander	0.2%	0.4%
^	Unknown	1.1%	1.8%
Active Diagnoses	Anemia	31.0%	26.1%
^	Arteriosclerotic Heart Disease	17.9%	21.5%
^	Congestive Heart Failure	22.8%	17.1%
^	COPD	25.2%	21.5%
^	Depression	32.3%	33.4%
^	Diabetes	34.4%	33.3%
^	Hip Fracture	7.1%	5.0%
^	Hypertension	75.4%	71.2%
^	Osteoporosis	44.9%	11.1%
^	Stroke	12.4%	12.7%
Special Treatment and Services	Brain Injury	0.1%	0.9%
^	Hospice	0.4%	5.9%
^	IV Medication	9.1%	7.7%
^	Parenteral/IV Nutrition	0.6%	0.4%

Characteristic	Characteristic Category	Medicare Admissions	Non-Medicare Admissions
^	Respite	0.0%	0.9%
^	Ventilator/Respirator	0.4%	0.7%

^ Cell intentionally left empty

*Data from AHCA Quality Report 2013, based on MDS and OSCAR data.

[Response Ends]

2a.07. If there are differences in the data or sample used for different aspects of testing (e.g., reliability, validity, exclusions, risk adjustment), identify how the data or sample are different for each aspect of testing.

[Response Begins]

2022 Submission

For validity testing, we used more recent national data from 2019 and 2020.

[Response Ends]

2a.08. List the social risk factors that were available and analyzed.

For example, patient-reported data (e.g., income, education, language), proxy variables when social risk data are not collected from each patient (e.g. census tract), or patient community characteristics (e.g. percent vacant housing, crime rate) which do not have to be a proxy for patient-level data.

[Response Begins]

We tested black/non-black, Medicaid/non-Medicaid, and the interaction between these binary variables for their relationships with rehospitalization rates.

Race/ethnicity items other than black/non-black either did not have significant patient-level effects in a fixed effects model (Hispanic/Latino) or our sample was insufficient (American Indian or Alaska Native; Native Hawaiian or Pacific Islander).

[Response Ends]

Note: If accuracy/correctness (validity) of data elements was empirically tested, separate reliability testing of data elements is not required – in 2a.07 check patient or encounter-level data; in 2a.08 enter "see validity testing section of data elements"; and enter "N/A" for 2a.09 and 2a.10.

2a.09. Select the level of reliability testing conducted.

Choose one or both levels.

[Response Begins]

Patient or Encounter-Level (e.g., inter-abstractor reliability; data element reliability must address ALL critical data elements)

[Response Ends]

2a.10. For each level of reliability testing checked above, describe the method of reliability testing and what it tests.

Describe the steps—do not just name a method; what type of error does it test; what statistical analysis was used.

[Response Begins]

We used parallel forms reliability by calculating several measures based on MDS 3.0 data submitted by over 2,800 SNFs directly to the research team and MDS 3.0 data from these same SNFs provided by CMS. We calculated the number of admission, tracking rate, observed rehospitalization rate and expected rehospitalization rate using both data sets and compared the results.

[Response Ends]

2a.11. For each level of reliability testing checked above, what were the statistical results from reliability testing?

For example, provide the percent agreement and kappa for the critical data elements, or distribution of reliability statistics from a signal-to-noise analysis. For score-level reliability testing, when using a signal-to-noise analysis, more than just one overall statistic should be reported (i.e., to demonstrate variation in reliability across providers). If a particular method yields only one statistic, this should be explained. In addition, reporting of results stratified by sample size is preferred (pg. 18, NQF Measure Evaluation Criteria).

[Response Begins]

The results of these reliability tests showed that in 206 cases (7%), numbers matched exactly on both the number of admissions and the tracking rate. In 1,869 cases (66%), the CMS data observed rate calculation minus the SNF data observed calculation was within 1%. In 2,652 cases (94%), the CMS data expected rate calculation minus the SNF data expected calculation was within 1%.

[Response Ends]

2a.12. Interpret the results, in terms of how they demonstrate reliability.

(In other words, what do the results mean and what are the norms for the test conducted?)

[Response Begins]

MDS 3.0 data received from CMS are reliable when compared to data gathered directly from participating SNFs. We assumed that data gathered directly from SNFs would be more accurate and complete because the facilities providing these data were paying for analytic services.

[Response Ends]

2b. Validity

2b.01. Select the level of validity testing that was conducted.

[Response Begins]

Patient or Encounter-Level (data element validity must address ALL critical data elements)

Empirical validity testing

Systematic assessment of face validity of performance measure score as an indicator of quality or resource use (i.e., is an accurate reflection of performance on quality or resource use and can distinguish good from poor performance)

[Response Ends]

2b.02. For each level of testing checked above, describe the method of validity testing and what it tests.

Describe the steps—do not just name a method; what was tested, e.g., accuracy of data elements compared to authoritative source, relationship to another measure as expected; what statistical analysis was used.

[Response Begins]

First, Medicare hospitalization claims were used to validate MDS 3.0 discharge assessments. Discharge records were categorized into four groups based on the values in the discharge status field: acute (if acute hospital), non-acute (if psychiatric hospital or ID/DD facility), death (if deceased), and other (if community, another SNF or swing bed, IRF,

Hospice and other). Any hospitalization claims within ±3 days of a discharge assessment for the individual were identified and checked whether the discharge status could be verified by the Medicare claim. Verifying claims as acute (i.e. inpatient claims filed by general hospitals), outpatient and non-acute (i.e. inpatient claims filed by specialized hospitals) were grouped. Death was verified using date of death from the enrollment records. Discharge records matching to hospital claims and death dates were examined.

Second, the proportion of Medicare hospital claims that had an associated MDS 3.0 discharge assessment designated as being sent to the hospital from the SNF were estimated. The origin location of patients based on previous MDS 3.0 discharge assessments were also identified to ensure patients had not been discharged to a facility or other places after SNF admission. The 30 day rehospitalization rates were calculated using different data sources aggregating a binary variable indicating whether the patient was rehospitalized within 30 days of SNF admission. The rates were decomposed into three components: verified by other source, not rehospitalized from SNF and not-verified. If an individual had multiple hospitalizations, the earlier component trumped the later components.

The extent to which there was systematic error (related to facility characteristics) when MDS and claims data disagreed was explored. To examine this, the fraction of hospitalization events for SNFs that were identified by both MDS 3.0 and Medicare claims data was calculated. The hospitalization events that originated from SNFs and occurred within 30 days of SNF admission were included. The relationship of this variable with several SNF characteristics, including structural characteristics from OSCAR (size, occupancy rate, availability of staffing, deficiency score) and patient composition based on MDS 2010 were examined.

Finally, 30 day rehospitalization rates calculated at the SNF level based on acute discharge MDS 3.0 assessments with respect to rates based on Medicare hospitalization claims were plotted.

We also conducted construct validity testing. We hypothesized that facilities with low rehospitalization rates would correlate with other measures of quality such as CMS's overall five star rating system, the staffing component of the five star rating system, the number of survey deficiencies cited by CMS during their annual onsite inspection, as well as AHCA's quality award program based on the Baldridge program. We tested the relationship between a facility's rehospitalization rate and the short stay quality measure for pneumococcal vaccine (since infection is a leading cause of hospitalization and high vaccination rates also indicate a facility with a systematic process and philosophy of prevention).

We grouped facilities by their quality measures (e.g. five star rating, pneumococcal vaccination rates by quintile, and recipients of AHCA's Baldrige based quality award at silver or gold level) and calculated the rehospitalization rates for each grouping and also conducted correlation tests. We hypothesized that facilities with higher five star rating would have a lower rehospitalization for overall five star rating, the survey deficiency component and staffing component of five star. We also hypothesized that facilities with higher rates of pneumococcal vaccination would have lower rehospitalization rates. Additionally, we hypothesized that silver or gold recipients of the ACHA Quality Award program (based on meeting Baldrige criteria) would have lower rehospitalization rates compared to non-recipients.

2022 Submission

Since the last measure endorsement, we have expanded the validity testing as more relevant comparison data has become available. Specifically, we have added a comparison to two other short-stay readmission measures. First, CMS added a short-stay Medicare Fee-for-Service (FFS) claims-based rehospitalization (NHC-RM) to Care Compare (formerly Nursing Home Compare) and Five-Star in 2016. This measure has not been submitted for NQF endorsement. Second, CMS also began a Medicare Value-Based Purchasing (VBP) program based on another Medicare FFS claims-based measure (SNF-RM), which has been NQF endorsed (NQF#2510) in 2016. We hypothesized that Pro30 performance would correlate positively with both measures.

We also conducted additional testing on the relationship between five star ratings and Pro30 with more recent data to see if the prior inverse relationship still holds true.

[Response Ends]

2b.03. Provide the statistical results from validity testing.

Examples may include correlations or t-test results.

[Response Begins]

As shown in Table 3, 82.9% of MDS 3.0 discharge assessments indicating discharge location at an acute care hospital could be verified with inpatient claims data. An additional 3.7% of MDS 3.0 discharges could be verified with outpatient claims (indicating the event had been billed as an observation stay that probably lasted at least one night). Altogether, only 12.9% of MDS 3.0 discharges indicating acute hospitalization could not be verified with Medicare claims data. Since most MDS 3.0 discharge records indicating non-acute hospitalization had a corresponding acute hospital Medicare claim (63.3%), if both types of MDS 3.0 hospitalizations were combined, the percentage of MDS 3.0 discharges verified by an inpatient, outpatient or non-acute hospital claim is 87%. As shown in the lower panel of Table 3, results were similar when discharge assessments were restricted to just those occurring within 30 days of SNF admission. It should be noted that MDS 3.0 discharge records indicating that the patient was discharged dead were extremely accurate in comparison with the Medicare encounter record, which includes a discharge death date. This is a great improvement over the performance of the MDS 2.0 discharge record based upon published analyses from the last decade.

TABLE 3. Verifying MDS Discharge Records Using Inpatient and Outpatient Claims and Death Records, 2011

Discharge records	Discharge code for MDS	Acute Hospitalization from Claims	Out-Patient From Claims	Non-Acute from Claims	Death from Enrollment	Not Verified	Total Number of Discharges
All Discharge Records	Acute	82.9%	3.7%	0.5%	0.0%	12.9%	404,122
*	Non-Acute	63.3%	1.1%	18.4%	0.0%	17.2%	9,283
*	Dead	0.0%	0.0%	0.0%	99.8%	0.1%	81,220
*	Others	7.9%	1.1%	0.1%	0.0%	90.9%	801,284
All Discharge Records within 30 Days of SNF Admission	Acute	82.5%	0.5%	3.7%	0.0%	13.3%	216,674
*	Non-Acute	59.2%	20.7%	0.8%	0.0%	19.3%	4,760
*	Dead	0.0%	0.0%	0.0%	99.8%	0.2%	33,803
*	Others	3.5%	0.1%	0.6%	0.0%	95.8%	470,370

* Cell intentionally left empty

Table 4 below shows the 30 day rehospitalization rates calculated using the different data sources as well as the proportion of these that can be verified using the alternate data source (e.g. MDS discharge records vs. Medicare claims). Rehospitalization rates based upon the MDS, whether including non-acute events or not, are lower than those relying upon Medicare claims. At least part of this is attributable to the fact that the Medicare claim is truly a 30 day rehospitalization rate regardless of whether the patient had been discharged from the hospital or not; whereas, the MDS discharge refers only to transfers directly from the SNF that occurred within 30 days of admission from the hospital. For example, of the 19.77% acute hospitalization rate measured by the presence of a Medicare inpatient acute hospital claim, the rate would be 15.81% if measured only from an MDS discharge directly from the SNF. However, 3.35% of the 19.77% were hospitalizations that occurred before 30 days but AFTER the patient was discharged from the SNF to another location, often facility, meaning that the unexplained differential in the Medicare claims based rate and the MDS based rate is only 0.61%, or about 3 percent. Adding all the other sources of Medicare claims to the pool (including outpatient observation stays), the 30 day rehospitalization rate is higher at 21.11%, but the proportion unaccounted for is still very small. The bottom two rows begin with the MDS based measures and ask how frequently they are confirmed by Medicare claims. In this instance, whether we combine the acute and non-acute or look only at them independently, 2.16% to 2.23%, or just under 12%, of the difference is unexplained.

Table 4. 30 Day Rehospitalization Rate Based Upon Different Data Sources

Source	30 day Rehospitalization Rate	Rehospitalization Rate Decomposed by Verification from Other Source	*	*
*	*	Verified	Not from SNF	Non-verified
Acute Hospitalization (Medicare Inpatient Claims)	19.77%	15.81%	3.35%	0.61%
Any Hospitalization (Medicare Inpatient, Outpatient and Chronic Hospital Claims)	21.11%	16.69%	3.8%	0.62%
Acute Hospitalization (MDS Discharge)	18.37%	16.21%	*	2.16%
Any Hospitalization (MDS Discharge)	18.77%	16.54%	*	2.23%

* Cell intentionally left empty

As shown in Table 5 below, after excluding Medicare claims for those individuals with prior MDS records indicating discharge from the nursing facility to facility or another location, 93% of Medicare hospitalization claims taking place within 30 days of SNF admission could be verified with MDS discharge records. Another 1.5% had MDS discharge records indicating discharge to a non-acute location and 5.6% did not have an MDS discharge assessment. This suggests that, relative to Medicare claims data, the MDS discharge record is about 94% accurate.

Table 5. Verifying Medicare Hospitalization Claims Using MDS Discharge Records

Hospitalization Claims	Type of Claims	Total	% of Claims Identified as not from SNF	% of Claims that are Identified as from SNF Verified by MDS Records	*	*
*	*	*	*	Acute	Non-Acute	Not Verified
All Hospitalization Claims within 30 Days of SNF Admission	Acute	241,559	20.2%	93.0%	1.5%	5.6%
*	Non-acute	15,439	39.1%	90.2%	0.5%	9.3%
*	Out patient	7,173	63.8%	46.7%	38.2%	15.0%
*	All	264,171	22.5%	92.2%	1.9%	5.9%

* Cell intentionally left empty

In order to determine whether SNFs with certain characteristics were more or less likely to have submitted discharge records on their patients that were "errors" relative to the "gold standard" of Medicare claims, we calculated the percentage of all MDS discharge records reported that corresponded to a Medicare claim (either inpatient or outpatient).

Table 6 below presents the marginal effect of a one unit change in the explanatory variable on the facility "accuracy" rate. The facility characteristics generally have no relationship to the measurement performance as can be seen by t-statistics smaller than 2.0. The only variables that are marginally significant are the proportion of minority patients in the facility and even these are very small effects.

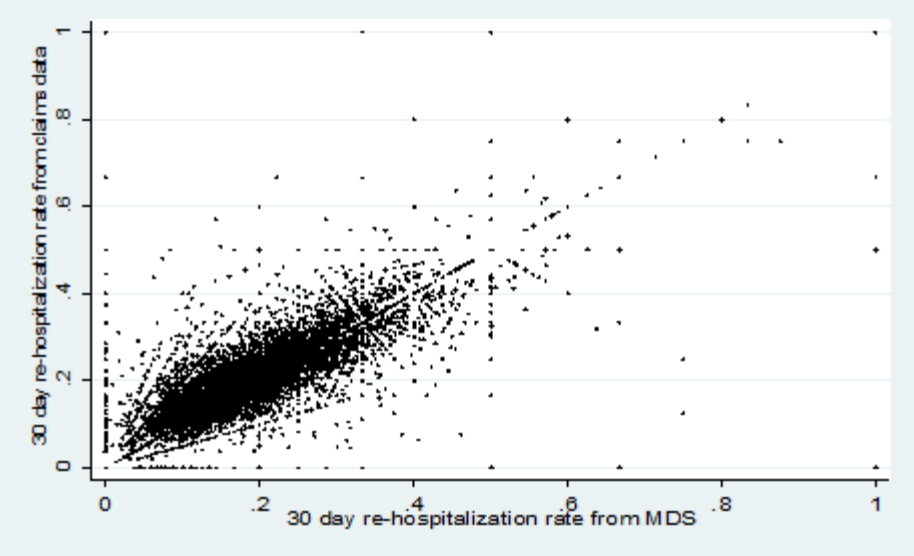
Table 6. Linear Regression of Fraction of Hospitalization Events Identified From Both MDS and Medicare Claims onto SNF Characteristics

Independent Variables	Coefficient	t-statistics	95% Confidence Interval
Current Health Deficiencies	-0.051	-1.14	(-0.14, 0.038)
Best-Guess Total Beds in Facility	0.01	3.27	(0.004, 0.017)
% Medicaid as Primary Payer	0.025	1.76	(-0.004, 0.054)
Part of a Chain	0.543	1.33	(-0.28, 1.366)
For-Profit	-0.519	-1.27	(-1.337, 0.299)
Hospital Based	0.248	0.3	(-1.394, 1.89)
Resident Acuity Index	-0.184	-1.58	(-0.418, 0.05)
Any Physician Extender FTEs	-0.031	-0.12	(-0.53, 0.469)
Ratio of RN to total nurse	0.673	0.45	(-2.342, 3.688)
Total direct Care Hours per Day per Resident	-0.043	-0.35	(-0.293, 0.206)
Weighted Deficiency (all) Score	-0.003	-0.92	(-0.01, 0.004)
Percent Occupancy	0.033	2.25	(0.004, 0.062)
% of Admissions Classified "Low Care"	0.012	0.27	(-0.08, 0.104)
% of Admissions from Acute Hospital	0.012	0.84	(-0.017, 0.042)
% of Admissions Female	0.029	1.55	(-0.009, 0.066)
% of Admissions Black	-0.055	-3.96	(-0.083, -0.027)
% of Admissions Hispanic	-0.068	-3.14	(-0.112, -0.025)
# of Annual Admissions per Bed	-0.104	-1.31	(-0.264, 0.056)
# Hospitalizations per Resident Year	0.422	1.08	(-0.362, 1.205)
Mean RUGS (512) Value Across Residents	6.417	3.32	(2.531, 10.303)
Mean Age at Assessment Across Residents	0.083	1.94	(-0.003, 0.168)
Constant	65.177	11.73	(54.008, 76.346)
N	13684	*	*
R-squared	0.0121	*	*
Joint Test of Significance F (21,48)	7.11	*	*

*Cell intentionally left empty

Finally, as shown in Figure 1 below, we compared facility level 30 day rehospitalization rates using MDS and Medicare claims data.

FIGURE 1. 30 Day Rehospitalization Rates Calculated from Medicare Claims and MDS



Scatter plot of claims-based rehospitalization on the y-axis and MDS-based rehospitalizations on the x-axis

With respect to the short stay quality measure for pneumococcal vaccination rates; we found an inverse correlation (-0.15916, p<0.0001) with a facility's rehospitalization rate. In other words, the higher the vaccination rate, the lower the rehospitalization rate. With respect to the relationship between a facility's rehospitalization rate and being a recipient of AHCA's Baldridge based award, silver/gold recipients have significantly lower rehospitalization rates compared to non-AHCA member recipients (17.8 vs 18.3 in 2011 Q4, p<0.01). This difference persisted 18 months later in 2013 Q2 data (17.2 vs 17.7, p<0.01).

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With respect to the relationship of rehospitalization rate and five star rating, we found a consistent inverse relationship between the rehospitalization rate and the overall five star rating, health inspection component of five star, and the nurse staffing component of five star. These relationships held true with more recent five-star ratings pre-COVID pandemic (2019-Q3) and during (2020-Q3) (see Table 7.A, 7.B, and 7.C below).

TABLE 7.A. Average Rehospitalization Rate by Overall Five Star Rating

Overall Five Star Rating	Risk-Adjusted Rehospitalization Rate	*	*
*	**2012-Q2**	**2019-Q3**	**2020-Q3**
1	19.0	18.6	17.8
2	18.3	17.3	16.6
3	17.9	16.9	16.3
4	17.3	16.4	15.9
5	16.4	14.8	14.5
Correlation Coefficient (p-value)	-0.157 (p<0.001)	-0.247 (p<0.001)	-0.206 (p<0.001)

* Cell intentionally left empty

TABLE 7.B Average Rehospitalization Rate by CMS's Health Inspections Five Star Rating

Health Inspection Five Star Rating	Risk-Adjusted Rehospitalization Rate	*	*
*	**2012-Q2**	**2019-Q3**	**2020-Q3**
1	18.6	17.9	17.1

Health Inspection Five Star Rating	Risk-Adjusted Rehospitalization Rate	*	*
2	18.0	17.0	16.3
3	17.6	16.6	15.9
4	17.0	16.2	15.7
5	16.2	15.2	14.8
Correlation Coefficient (p-value)	-0.134 (p<0.001)	-0.150 (p<0.001)	-0.123 (p<0.001)

* Cell intentionally left empty

TABLE 7.C Average Rehospitalization Rate by Nurse Staffing Five Star Rating

Nurse Staffing Five Star Rating	Risk-Adjusted Rehospitalization Rate	*	*
*	**2012-Q2**	**2019-Q3**	**2020-Q3**
1	19.0	17.8	16.7
2	18.5	17.4	16.6
3	18.0	16.7	16.2
4	17.2	16.2	15.9
5	15.2	14.7	14.9
Correlation Coefficient (p-value)	-0.173 (p<0.001)	-0.174 (p<0.001)	-0.110 (p<0.001)

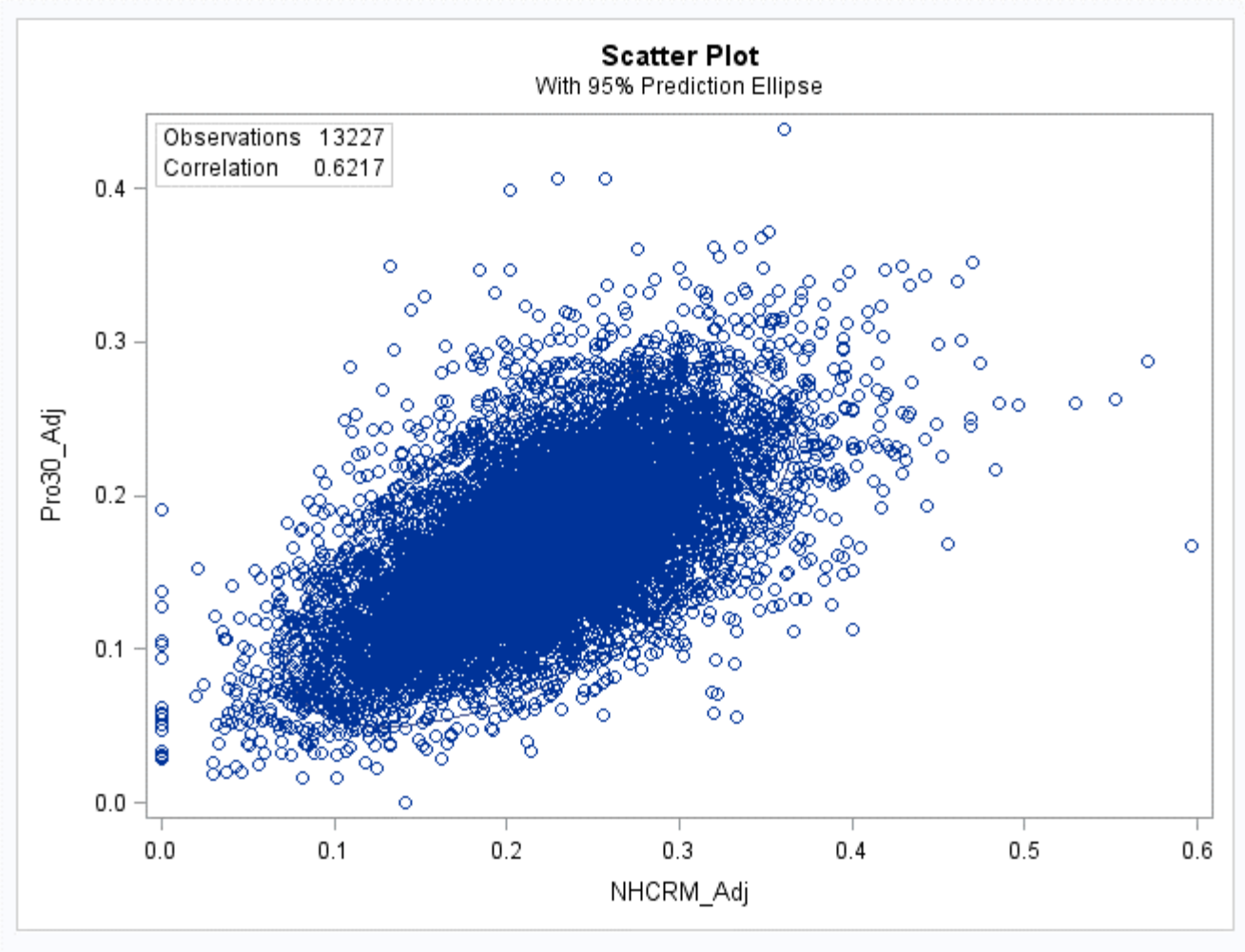
* Cell intentionally left empty

Table 8 below provides a comparison of the three short-stay rehospitalization measures in use today. Pro30 had a statistically significant positive correlation with both Medicare claims-based rehospitalization measures, NHC-RM (0.622, p<0.0001) and SNF-RM (0.586, p<0.0001) (see figures 2 and 3 for scatter plots).

TABLE 8. 30 Day Rehospitalization Rate Across Different Measures (2019-Q3)

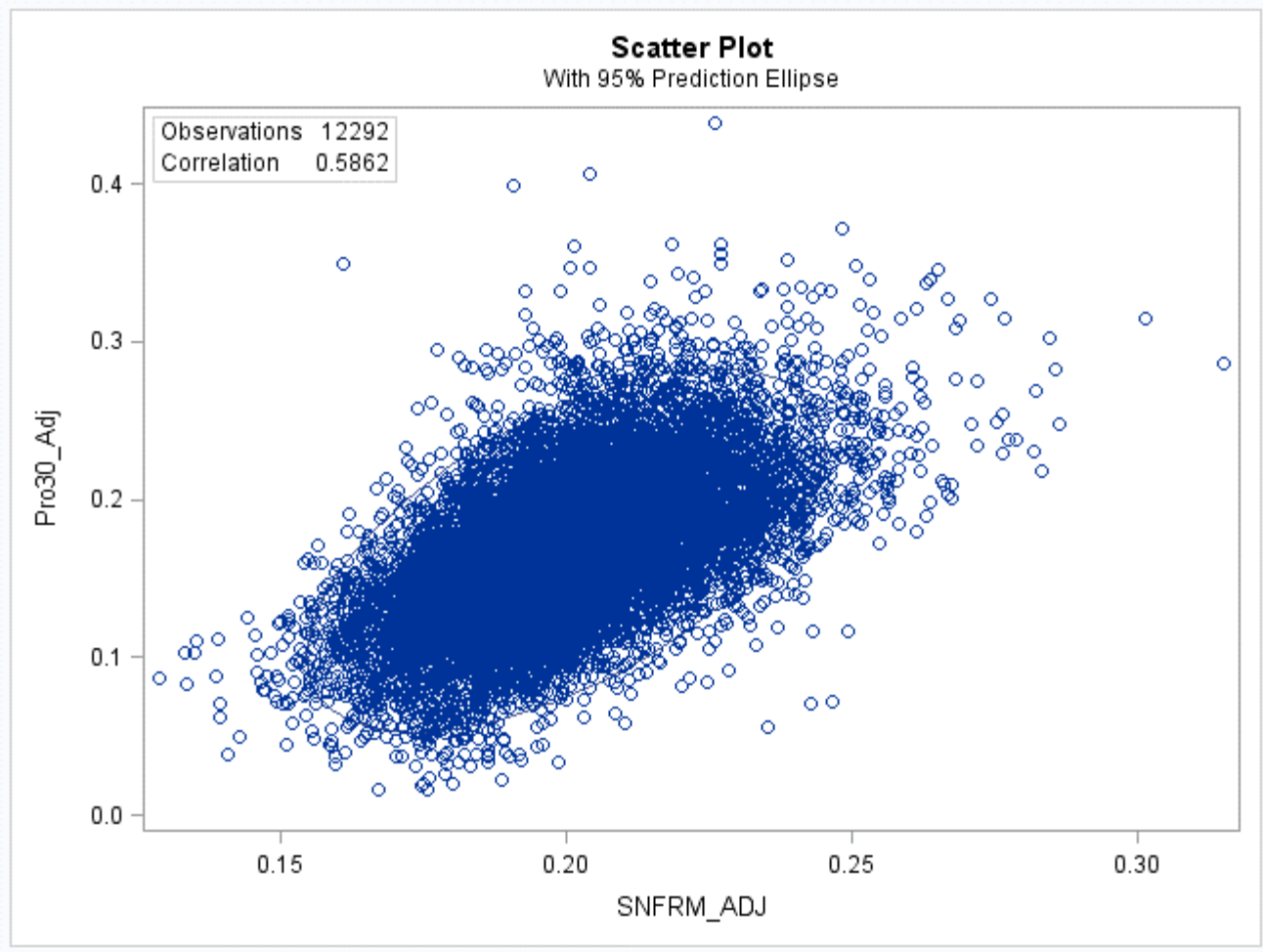
Measure	Data Source	Uses	N	Mean	Std	p25	p50 Median	p75
Pro30	MDS	State Medicaid VBPs	13,791	16.7%	5.0%	13.5%	16.5%	19.8%
NHC-RM	Medicare FFS Claims	Five-Star	13,517	22.0%	6.1%	18.2%	22.1%	25.8%
SNF-RM	Medicare FFS Claims	Medicare SNF-VBP	12,510	20.0%	1.8%	18.7%	19.9%	21.1%

FIGURE 2. 30 Day Rehospitalization Rates Calculated Using Pro30 (MDS-based) and NHC-RM (Claims-based) - 2019Q3



Scatter plot of Pro30 MDS-based rehospitalization on the y-axis and NHC-RM claims-based rehospitalizations on the x-axis

FIGURE 3. 30 Day Rehospitalization Rates Calculated Using Pro30 (MDS-based) and SNFRM (Claims-based) - 2019Q3



Scatter plot of Pro30 MDS-based rehospitalization on the y-axis and SNF-RM claims-based rehospitalizations on the x-axis

[Response Ends]

2b.04. Provide your interpretation of the results in terms of demonstrating validity. (i.e., what do the results mean and what are the norms for the test conducted?)

[Response Begins]

In summary, the results suggest that the MDS 3.0 and Medicare claims correspond over 90%, depending upon how one collapses the types of hospitalization. As importantly, our analyses of the facility factors related to non-correspondence between MDS and Medicare claims strongly suggest that what we observe is truly "random error", suggesting that an MDS based measure is a good surrogate for a Medicare claims based measure. This is further supported by the more recent analysis comparing Pro30 measure rates with both NHC-RM and SNF-RM, two Medicare claims-based measures. Relative to these claims-based measures, Pro30 has the added advantage of being much timelier, includes Medicare advantage and even non-Medicare patients and clearly includes hospitalizations that are billed as "Observation Days".

While the team did not specifically conduct analysis on the MDS, the validity of this tool has been confirmed by previous analyses presented in peer reviewed literature (list of citations provided below). Notably, Saliba and Buchanan (2008) found that the MDS 3.0 is reliable and valid. Validity of the instrument was determined by comparing items to established gold standards or other related items and scales. MDS 3.0 cognitive, depression and behavioral items have a higher level of correlation with the comparison groups than did MDS 2.0 items. Eighty one percent of the nurses sampled also strongly agreed or agreed that the MDS 3.0 was clinically relevant and 89 percent strongly agreed or agreed that the MDS 3.0 items provide a more accurate report of the resident's characteristics.

Saliba , D., & Buchanan, J. (2008). Development & validation of a revised nursing facility assessment tool: MDS 3.0. *Rand Health Corporation*.

Saliba, D. & Buchanan, J. (2012). Making the investment count: Revision of the minimum data set for nursing homes, MDS 3.0. *J Am Med Dir Assoc*. 13(7), 602-610.

Saliba, D., Buchanan, J., Eldelen, M.O., Streim, J., Ouslander, J., Berlowitz, D., & Chodosh, J. (2012). MDS 3.0: Brief interview for mental status. *J Am Med Dir Assoc.* 13(7), 611-617.

Saliba, D., DeFilippo, S., Edelen, M.O., Kroenke, K., Buchanan, J., & Streim, J. (2012) Testing the PHQ-9 interview and observational versions (PHQ-9 OV) for MDS 3.0. *J Am Dir Assoc.* 13(7), 618-625.

Saliba, D., Jones, M., Streim, J., Ouslander, J., Berlowitz, D., & Buchanan, J. (2012) Overview of significant changes in the minimum data set for nursing facilities version 3.0. *J Am Dir Assoc*. 13(7), 595-601.

[Response Ends]

2b.05. Describe the method for determining if statistically significant and clinically/practically meaningful differences in performance measure scores among the measured entities can be identified.

Describe the steps—do not just name a method; what statistical analysis was used? Do not just repeat the information provided in Importance to Measure and Report: Gap in Care/Disparities.

[Response Begins]

As described earlier, the change in score across 1 quarter measured at three different quarters (Q1 to Q2; Q2 to Q3 and Q3 to Q4) were essentially the same size in magnitude for sample sizes greater than 30 but were much higher for sample sizes less than 30.

No tests of a clinically meaningful difference between providers or between observation periods were performed. AHCA has gathered clinical input from member providers in selecting improvement targets through multiple iterations of AHCA's quality initiative.

[Response Ends]

2b.06. Describe the statistical results from testing the ability to identify statistically significant and/or clinically/practically meaningful differences in performance measure scores across measured entities.

Examples may include number and percentage of entities with scores that were statistically significantly different from mean or some benchmark, different from expected; how was meaningful difference defined.

[Response Begins]

From 2011-Q4 to 2019-Q3 there has been a relatively steady decline in the national average rate. Specifically, there has been an 8% decrease in the average rate from 18.2% to 16.7% during this time period.

[Response Ends]

2b.07. Provide your interpretation of the results in terms of demonstrating the ability to identify statistically significant and/or clinically/practically meaningful differences in performance across measured entities.

In other words, what do the results mean in terms of statistical and meaningful differences?

[Response Begins]

There has been substantial pressure on providers to reduce hospital readmissions through alternative payment models, public reporting, and value-based purchasing programs. Subsequently, there has been steady improvement in the average rate over time and there still appears to be an opportunity for further improvement.

[Response Ends]

2b.08. Describe the method of testing conducted to identify the extent and distribution of missing data (or non-response) and demonstrate that performance results are not biased due to systematic missing data (or differences between responders and non-responders). Include how the specified handling of missing data minimizes bias.

Describe the steps—do not just name a method; what statistical analysis was used.

[Response Begins]

We determined the amount of missing data in the MDS 3.0 used to determine the numerator. If an MDS discharge assessment is not completed for individuals discharged a facility's rates could be biased due to missing data. We specifically calculated the proportion of SNF admissions with missing discharge data.

This was accomplished as follows:

1. Identified all entries, including new admissions and re-entries. The entry date was determined using 2 variables: A1600 (entry date) and A0310F=01.
2. If an entry was accompanied by an admission assessment within 14 days of the entry date it was considered a new entry.
3. Determined whether an entry had a discharge record:

- If yes, then the entry was **complete**
- If not, then
    - If there was another entry record after the index entry, then the index entry is incomplete due to **missing discharge date**
    - If there was only one MDS entry record without any following MDS records:
        - If the entry date was within 14 days of 04/30/2012 (the latest date in the MDS 3.0 data received from AHCA), the reason for incompleteness could be due **to data truncation;**
        - If the entry date was a re-entry, and the date was within 120 days of 04/30/2012 (90 days would be the expected number, but an additional 30 days were added for increased tolerance), the reason of incompleteness could be due **to data truncation** (re-entry does not necessarily need an admission assessment or Medicare assessment)
        - If not above, the single entry record is problematic, and was assigned as "**only one record for an entry**"
    - If the last available MDS record was within 120 days of 04/30/2012, then the incompleteness could also be due to **data truncation**
    - If not the above type, it was assigned the reason of incompleteness as "**all other incomplete**"

[Response Ends]

2b.09. Provide the overall frequency of missing data, the distribution of missing data across providers, and the results from testing related to missing data.

For example, provide results of sensitivity analysis of the effect of various rules for missing data/non-response. If no empirical sensitivity analysis was conducted, identify the approaches for handling missing data that were considered and benefits and drawbacks of each).

[Response Begins]

Results showed that the level of completeness is high, defined as over 95% of admissions having either a discharge assessment completed or another MDS data indicating that the person stayed in the facility, in most states as shown in the Table below. Based on these results, the decision was made to exclude facilities with greater than five percent missing data from the re-hospitalization rate analyses. In addition, facilities with between two and five percent missing data will be flagged in the reported re-hospitalization rates provided to the facility to allow them to improve their data completion rate. We also compared MDS data to claims data and did not discover large amount of new cases not detected by MDS again supporting that missing data is infrequent for the majority of providers.

TABLE- Distribution of MDS 3.0 Admission and Discharge Records and the Levels and Possible Types of "Missingness" by State

State	Number of Admissions	Completed	Data Truncated	Missing Discharge	Only One MDS	All Other Incomplete
AK	1131	78.16%	19.89%	0.71%	0.35%	0.88%
AL	81251	80.57%	17.75%	0.20%	0.37%	1.12%
AR	52104	73.30%	21.87%	1.44%	0.79%	2.61%
AZ	83897	88.41%	9.80%	0.20%	0.69%	0.90%
CA	476657	83.35%	14.10%	0.32%	0.46%	1.40%
CO	65252	83.32%	15.23%	0.20%	0.46%	0.78%
CT	97330	82.84%	15.49%	0.28%	0.44%	0.95%
DC	6213	74.51%	22.71%	0.56%	0.66%	1.56%
DE	16916	83.18%	15.80%	0.18%	0.31%	0.54%
FL	382468	85.14%	13.49%	0.23%	0.35%	0.79%
GA	106487	79.43%	19.92%	0.15%	0.20%	0.30%
HI	9552	80.31%	17.50%	0.13%	0.34%	1.73%
IA	61458	75.69%	23.40%	0.18%	0.21%	0.52%
ID	19087	85.48%	13.77%	0.07%	0.36%	0.32%
IL	294768	82.15%	16.26%	0.25%	0.38%	0.96%
IN	140985	81.18%	18.30%	0.10%	0.12%	0.30%
KS	54171	77.57%	21.25%	0.16%	0.35%	0.68%
KY	85170	81.47%	18.07%	0.08%	0.09%	0.29%
LA	72386	75.19%	23.91%	0.31%	0.16%	0.43%
MA	179603	84.06%	14.72%	0.16%	0.43%	0.63%
MD	115055	83.47%	14.26%	0.29%	0.51%	1.46%
ME	27241	84.68%	14.78%	0.11%	0.29%	0.14%
MI	181933	83.83%	14.38%	0.30%	0.37%	1.11%
MN	108197	84.02%	15.63%	0.01%	0.12%	0.22%
MO	130969	79.05%	18.85%	0.45%	0.47%	1.18%
MS	46460	76.98%	22.17%	0.41%	0.18%	0.26%
MT	12995	79.57%	19.48%	0.17%	0.31%	0.47%
NC	144286	82.56%	16.97%	0.12%	0.13%	0.22%
ND	13377	74.37%	25.04%	0.07%	0.19%	0.33%
NE	40226	79.88%	19.43%	0.13%	0.17%	0.40%
NH	22624	81.10%	18.29%	0.07%	0.18%	0.36%
NJ	215444	85.60%	13.80%	0.14%	0.14%	0.31%

State	Number of Admissions	Completed	Data Truncated	Missing Discharge	Only One MDS	All Other Incomplete
NM	21177	78.39%	17.03%	0.39%	0.90%	3.28%
NV	31546	83.30%	11.82%	0.49%	3.54%	0.85%
NY	356794	79.16%	18.46%	0.57%	0.52%	1.29%
OH	334314	83.85%	15.23%	0.13%	0.27%	0.51%
OK	55868	76.01%	21.01%	0.46%	0.69%	1.83%
OR	47006	87.91%	10.71%	0.13%	0.57%	0.68%
PA	327591	83.39%	16.01%	0.11%	0.29%	0.20%
PR	833	97.84%	1.32%	0.00%	0.72%	0.12%
RI	29537	81.38%	16.47%	0.33%	0.67%	1.16%
SC	62031	80.89%	17.38%	0.26%	0.49%	0.99%
SD	13294	73.34%	26.40%	0.04%	0.15%	0.08%
TN	113035	80.36%	18.14%	0.23%	0.43%	0.84%
TX	310019	73.74%	20.58%	0.89%	0.80%	3.98%
UT	30841	84.53%	12.28%	0.27%	0.74%	2.18%
VA	124513	83.63%	15.12%	0.15%	0.27%	0.84%
VI	121	80.17%	6.61%	0.83%	3.31%	9.09%
VT	10555	81.74%	17.38%	0.11%	0.36%	0.41%
WA	90076	86.70%	13.07%	0.05%	0.09%	0.09%
WI	105003	81.81%	16.96%	0.14%	0.33%	0.76%
WV	33335	80.49%	18.37%	0.11%	0.30%	0.73%
WY	5168	74.46%	23.84%	0.12%	0.27%	1.32%

[Response Ends]

2b.10. Provide your interpretation of the results, in terms of demonstrating that performance results are not biased due to systematic missing data (or differences between responders and non-responders), and how the specified handling of missing data minimizes bias.

In other words, what do the results mean in terms of supporting the selected approach for missing data and what are the norms for the test conducted; if no empirical analysis was conducted, justify the selected approach for missing data.

[Response Begins]

Overall, missing data is infrequent. The vast majority of providers had complete MDS data to calculate the measure, however, it is worthwhile to calculate the degree of missing data on the numerator and not report a facility's rate if they do not complete an MDS discharge assessment (the source for numerator information) at least 95% of the time.

[Response Ends]

Note: This item is directed to measures that are risk-adjusted (with or without social risk factors) OR to measures with more than one set of specifications/instructions (e.g., one set of specifications for how to identify and compute the measure from medical record abstraction and a different set of specifications for claims or eCQMs). It does not apply to measures that use more than one source of data in one set of specifications/instructions (e.g., claims data to identify the denominator and medical record abstraction for the numerator). Comparability is not required when comparing performance scores with and without social risk factors in the risk adjustment model. However, if comparability is not demonstrated for measures with more than one set of specifications/instructions, the different specifications (e.g., for medical records vs. claims) should be submitted as separate measures.

2b.11. Indicate whether there is more than one set of specifications for this measure.

[Response Begins]

No, there is only one set of specifications for this measure

[Response Ends]

2b.12. Describe the method of testing conducted to compare performance scores for the same entities across the different data sources/specifications.

Describe the steps—do not just name a method. Indicate what statistical analysis was used.

[Response Begins]

[Response Ends]

2b.13. Provide the statistical results from testing comparability of performance scores for the same entities when using different data sources/specifications.

Examples may include correlation, and/or rank order.

[Response Begins]

[Response Ends]

2b.14. Provide your interpretation of the results in terms of the differences in performance measure scores for the same entities across the different data sources/specifications.

In other words, what do the results mean and what are the norms for the test conducted.

[Response Begins]

[Response Ends]

2b.15. Indicate whether the measure uses exclusions.

[Response Begins]

N/A or no exclusions

[Response Ends]

2b.16. Describe the method of testing exclusions and what was tested.

Describe the steps—do not just name a method; what was tested, e.g., whether exclusions affect overall performance scores; what statistical analysis was used?

[Response Begins]

We included all Medicare/Medicaid certified SNFs in the nation that were present from January 2011 through September 2012, except 85 facilities which could not be stratified into our categories due to extreme changes in the number of admissions. The final sample included 15,546 SNFs.

Variation in the number of admissions from hospitals to a SNF from one time period to the next is expected to affect the SNF's rehospitalization rates. The fewer the number of admissions, the more volatile these changes in rates will be. Due to this we have decided to exclude SNFs with fewer than 30 admissions from hospitals during any 12 month period from our rehospitalization rate reporting. (Note: while rates for the excluded facilities are not reported, admissions and rehospitalizations from these facilities are used to calculate the national rate used in the calculation of the adjusted rehospitalization rate).

To test this decision we stratified SNFs based on their average number of admissions over four 12 month periods (Jan 11 to Dec 11, Apr 11 to Mar 12, July 11 to June 12 and Oct 11 to Sept 12). SNFs were stratified into four groups based on their average number of admissions: 1) those with fewer than 30 admissions, 2) 30-50 admissions, 3) 50-100 admissions, and 4) >100 admissions from hospital each year. We then compared the average change in rehospitalization rates from 12 month period to 12 month period across the four groups.

[Response Ends]

2b.17. Provide the statistical results from testing exclusions.

Include overall number and percentage of individuals excluded, frequency distribution of exclusions across measured entities, and impact on performance measure scores.

[Response Begins]

As expected, the average change in rates decreased as the number of admissions increased. This is shown in the table below.

TABLE 8. Change in Rates Quarter to Quarter Stratified by Number Admissions to a SNF

Category	Observations	Variable	Mean	S.D.	Maximum
Average <30	1589	Adjusted Rate Q1	0.1314	0.1632	2.7674
*	*	Change Q2-Q1	0.0531	0.0887	1.0841
*	*	Change Q3-Q2	0.0574	0.1509	4.3926
*	*	Change Q4-Q3	0.0567	0.1619	4.4453
Average >=30 & <50	1220	Adjusted Rate Q1	0.1533	0.0730	0.5444
*	*	Change Q2-Q1	0.0325	0.0276	0.2076
*	*	Change Q3-Q2	0.0309	0.0269	0.2359
*	*	Change Q4-Q3	0.0298	0.0260	0.1691
Average >=50 & <100	2830	Adjusted Rate Q1	0.1717	0.0615	0.4769
*	*	Change Q2-Q1	0.0267	0.0216	0.1539
*	*	Change Q3-Q2	0.0248	0.0197	0.1316
*	*	Change Q4-Q3	0.0241	0.0202	0.1690
Average >=100	9822	Adjusted Rate Q1	0.1862	0.0519	0.4528
*	*	Change Q2-Q1	0.0160	0.0132	0.1132
*	*	Change Q3-Q2	0.0153	0.0126	0.1133
*	*	Change Q4-Q3	0.0149	0.0126	0.1056

* Cell intentionally left empty

[Response Ends]

2b.18. Provide your interpretation of the results, in terms of demonstrating that exclusions are needed to prevent unfair distortion of performance results.

In other words, the value outweighs the burden of increased data collection and analysis. Note: If patient preference is an exclusion, the measure must be specified so that the effect on the performance score is transparent, e.g., scores with and without exclusion.

[Response Begins]

The results show the average change decreased as the number of admissions increased mostly below 30 admissions per year compared to those > than 30 admissions a year. This validates the decision to exclude SNFs with fewer than 30 admissions from hospitals during any 12 month period from our rehospitalization rate reporting.

[Response Ends]

2b.19. Check all methods used to address risk factors.

[Response Begins]

Statistical risk model with risk factors (specify number of risk factors)

33 risk factors

[Response Ends]

2b.20. If using statistical risk models, provide detailed risk model specifications, including the risk model method, risk factors, risk factor data sources, coefficients, equations, codes with descriptors, and definitions.

[Response Begins]

The formula for a facility's adjusted rehospitalization rate is as follows

(Observed Rate of Rehospitalization within 30 days) / (Expected Rate of Rehospitalization within 30 days) * (National rate).

1. Observed Rate Calculation

The formula for a facility's observed Rehospitalization rate is as follows:

(Observed count of discharges to hospitals within 30 days of admission) / (Observed count of admissions from hospitals)

- The denominator is the number of any admissions from a hospital during a 12 month measurement period. (This is a count of events, not of residents.)
- The numerator is the number of all admissions to the SNF during a 12 month measurement period who then went back to the hospital within 30 days of their admission date. (This is a count of events, not of residents.)

2. Expected Rate Calculation

2.1 First the expected rate for every single resident admission is calculated using the formula below.

The calculation must be performed at least 45 days after the end of the target 12-month measurement period. This is to allow 30 days to elapse to capture rehospitalizations that occur from admission to the SNF on the last day of the target period and another 14 days to allow facilities to submit data to CMS. We recommend waiting an additional 2 to 3 weeks to ensure maximum data availability for MDS assessments not submitted during the 14 day period.

VARIABLE CALCULATION USING MDS

Intercept: -2.8252

Age Under 65: if age<65 then Variable=1; else Variable=0; (If Date of Birth is missing, then Variable=0)

End Stage Prognosis:if J1400=1 then Variable=1; else Variable=0;

Hospice Care: if O0100K2=1 then Variable=1; else Variable=0;

Male: if A0800=1 then Variable=1; else Variable=0;

Medicare: if A0310B = 01 or 06, then Variable=1;else Variable=0;

SNF Admission is Return to Same SNF Following Hospitalization: if A0310B=06 AND A1600 minus A2000 (on a previous MDS where A2100=3) < 30 then Variable=1; else if A1700=2 then Variable=1; else Variable=0;

Diagnoses

Anemia: if I0200=1 then Variable=1; else Variable=0;

Asthma: if I6200=1 then Variable=1; else Variable=0;

Diabetes Mellitus: if I2900=1 then Variable=1; else Variable=0;

Diabetic Foot Ulcer: if M1040B=1 then Variable=1; else Variable=0;

Pressure Ulcer Stage 2: if M0300B2>0 then Variable=1; else Variable=0;

Pressure Ulcer Stage 3: if M0300C2>0 then Variable=1; else Variable=0;

Pressure Ulcer Stage 4: if M0300D2>0 then Variable=1; else Variable=0;

Pressure Ulcer Unstageable: if M0300E2>0 or M0300F2>0 or M0300G2>0 then Variable=1; else Variable=0;

Respiratory Failure: if I6300=1 then Variable=1; else Variable=0;

Septicemia: if I2100=1 then Variable=1; else Variable=0;

Vascular Ulcer: if M1030>0 then Variable=1; else Variable=0;

Viral Hepatitis: if I2400=1 then Variable=1; else Variable=0;

Heart Failure: if I0600=1 then Variable=1; else Variable=0;

Internal Bleeding:if J1550D=1 then Variable=1; else Variable=0;

Functional Status

Daily Pain: if J0400=1 or J0850=3 then Variable=1; else Variable=0;

Eating Dependence-Total: if G0110H1 = 4,7, or 8, then Variable=1; else Variable=0;

Two Person assist Needed with One or More ADLs: if G0110A2=3 or G0110B2=3 or G0110C2=3 or G0110D2=3 or G0110E2=3 or G0110F2=3 or G0110G2=3 or G0110H2=3 or G0110I2=3 or G0110J2=3 then Variable=1; else Variable=0;

Cognition not Completely Intact: if C0100=1 AND if C0500=15 then Variable=0; if C0100=1 AND if C0500 <>15 then Variable=1;if C0100=0 AND if C0700=0 AND C0800=0 AND C1000=0 AND C0900A=1 AND C0900B=1 AND C0900C=1 AND C0900D=1 then Variable=0; else Variable=1;

Total Bowel Incontinence: if H0400>0 then Variable=1; else Variable=0;

Treatment

Cancer Chemotherapy: if O0100A1=1 then Variable=1; else Variable=0;

Dialysis: if O0100J1=1 then Variable=1; else Variable=0;

Insulin: if N0350A>0 or N0350B>0 then Variable=1; else Variable=0;

IV Medications Continuing from Hospital: if O0100H1=1 and O0100H2=1 then Variable=1; else Variable=0;

Ostomy Care: if H0100C=1 then Variable=1; else Variable=0;

Oxygen Continuing from Hospital: if O0100C1=1 and O0100C2=1 then Variable=1; else Variable=0;

Radiation Therapy: if O0100B1=1 then Variable=1; else Variable=0;

Tracheostomy Continuing from Hospital: if O0100E1=1 and O0100E2=1 then Variable=1; else Variable=0;

FORMULA

LogOdds = - 2.8252

-	0.7846 *	End Stage Prognosis
-	1.5085 *	Hospice_care
+	0.0923 *	Anemia
+	0.1033 *	Asthma
+	0.0611 *	Daily Pain
+	0.0462 *	Diabetes_Mellitus
+	0.1459 *	Diabetic Foot Ulcer
+	0.6038 *	Dialysis
+	0.1777 *	Insulin
+	0.3263 *	Ostomy Care
+	0.167 *	Pressure Ulcer Stage 2
+	0.1334 *	Pressure Ulcer Stage 3
+	0.1569 *	Pressure Ulcer Stage 4
+	0.181 *	Pressure Ulcer Unstageable
+	0.0891 *	Septicemia
+	0.1848 *	Total Bowel Incontinence
+	0.1862 *	Venous Arterial Ulcer
+	0.4017 *	Viral Hepatitis
+	0.177 *	Age Under 65
+	0.6001 *	Cancer Chemotherapy
+	0.188 *	IV Medication Continued from Hospital
+	0.3395 *	Oxygen Continuing from Hospital
+	0.1336 *	Tracheostomy Continuing from Hospital
+	0.4718 *	Eating Dependency
+	0.2004 *	Heart Failure
+	0.892 *	Internal Bleeding
+	0.1622 *	Male
+	0.14 *	Return to Same SNF Following Hospitalizations
+	0.5543 *	Medicare
+	0.2389 *	Two Person Assist Required for One or More ADLs
+	0.6111 *	Radiation Therapy
+	0.1159 *	Respiratory Failure
+	0.3327 *	Cognition Not Completely Intact

30-day Rehospitalization Probability= 1/(1+exp(-LogOdds))

2.2 Once the above calculation is performed for all admissions within the measurement period, the results are averaged to obtain the facility's expected rate of rehospitalization. Hence, the expected rate for a facility is the average of the expected rehospitalization probabilities for each admission during the target time period.

Procedure for Calculating the Measure

1. Establish the 12 month period and collect all assessments with entry dates that fall within the period. The count of these entries is the observed denominator.
2. For each entry date, determine whether the resident was discharged to an acute hospital within 30 days of the entry date. The count of these discharges is the observed numerator.

3. Divide the numerator by the denominator to obtain the observed rate for the SNF.
4. Calculate the expected rate for the facility using the expected probability model for admissions during the sample period, then average them for the 12-month period.
5. Divide the observed rate by the expected rate and multiply by the national average rate to obtain the adjusted all cause rehospitalization rate for the facility.

[Response Ends]

2b.21. If an outcome or resource use measure is not risk-adjusted or stratified, provide rationale and analyses to demonstrate that controlling for differences in patient characteristics (i.e., case mix) is not needed to achieve fair comparisons across measured entities.

[Response Begins]

[Response Ends]

2b.22. Select all applicable resources and methods used to develop the conceptual model of how social risk impacts this outcome.

[Response Begins]

Published literature

Internal data analysis

[Response Ends]

2b.23. Describe the conceptual and statistical methods and criteria used to test and select patient-level risk factors (e.g., clinical factors, social risk factors) used in the statistical risk model or for stratification by risk.

Please be sure to address the following: potential factors identified in the literature and/or expert panel; regression analysis; statistical significance of p<0.10 or other statistical tests; correlation of x or higher. Patient factors should be present at the start of care, if applicable. Also discuss any "ordering" of risk factor inclusion; note whether social risk factors are added after all clinical factors. Discuss any considerations regarding data sources (e.g., availability, specificity).

[Response Begins]

A bootstrap analysis as well as a stability analysis on the variables was conducted.

We performed a bootstrap analysis of the coefficients for PointRight Pro30 in the following way: We began with a sample of 585,572 admissions to SNFs from acute care hospitals with admission dates in CY2011. Data were used if the SNF involved had a discharge assessment completion rate of 95% or higher. We calculated the coefficients of the PointRight Pro30 logistic regression model on 1000 subsamples of 292,786 admissions. The distributions for each of the coefficients are displayed in the following table (Table 9) and compared with the coefficients used in the PointRight OnPoint-30 model, which was developed using a slightly different sample comprising 600,000 admissions to SNFs.

The PointRight Pro30 model is based on the assumption that its independent variables rarely change between the day of admission and the assessment reference date of the first MDS assessment. While we cannot assess this directly we can look at the change from the first to the second PPS assessment of Medicare patients who remain in the facility long enough for two assessments. Typically this will be the change from day 7 to day 14 of a post-acute stay. This provides a rough estimate of variable stability. Table 10 shows the rates of change between assessments that were 7 days apart (N= 203,386). Note that only four variables show rates of change – usually in the direction of improvement – of greater than 10%. These variables are those for cognitive impairment, total bowel incontinence, two-person assist, and continued oxygen therapy. For these four variables the table shows the prevalence of 1s in the model building sample and the

coefficient in the PointRight Pro30 model. Considering all of the facts, it appears that facility-level estimates of expected readmission rates are unlikely to be affected greatly by variable instability. When the PointRight Pro30 model is applied to data collected on the day of admission it will slightly overestimate the expected risk, because some patients with values of 1 on the least stable IVs will become zeroes by the day of the first MDS assessment.

[Response Ends]

2b.24. Detail the statistical results of the analyses used to test and select risk factors for inclusion in or exclusion from the risk model/stratification.

[Response Begins]

Bootstrap:

Table 9 shows the difference between the PointRight Pro30 coefficients and the mean coefficients from the bootstrap analysis, expressed as actual values, standard deviation (S.D.) and percentage. It is evident that only a few variables have more than 10% variation from the bootstrap mean; for those variables the absolute value and/or the number of standard deviations is clinically acceptable.

TABLE 9. Pointright Onpoint-30 Coefficients Compared with Mean from Bootstrap Sampling

Variable Type	Independent Variable	PointRight Pro30 Coefficient	Bootstrap Mean	S.D.	Difference	Difference in S.D.	Difference in %
Intercept	Intercept	-2.825	-2.819	0.019	-0.006	-0.32	0.2%
Type of Admission	Medicare	0.554	0.555	0.015	0.000	-0.03	-0.1%
*	Re-entry	0.140	0.125	0.011	0.015	1.30	10.6%
Demographics	Male	0.162	0.158	0.010	0.005	0.48	2.9%
*	Age Under 65	0.177	0.177	0.013	0.000	0.02	0.2%
Diagnoses	Anemia	0.092	0.092	0.010	0.000	0.02	0.2%
*	Asthma	0.103	0.105	0.011	-0.002	-0.16	-1.7%
*	Diabetes Mellitus	0.046	0.062	0.014	-0.016	-1.15	-34.6%
Diagnoses	Diabetic Foot Ulcer	0.146	0.139	0.044	0.007	0.17	5.0%
*	Heart Failure	0.200	0.206	0.012	-0.006	-0.51	-3.0%
*	Internal Bleeding	0.892	0.912	0.040	-0.020	-0.49	-2.2%
*	Pressure Ulcer (Stage 2)	0.167	0.181	0.016	-0.014	-0.86	-8.2%
*	Pressure Ulcer (Stage 3)	0.133	0.197	0.030	-0.063	-2.12	-47.5%

Variable Type	Independent Variable	PointRight Pro30 Coefficient	Bootstrap Mean	S.D.	Difference	Difference in S.D.	Difference in %
*	Pressure Ulcer (Stage 4)	0.157	0.146	0.037	0.011	0.29	6.8%
*	Pressure Ulcer (Unstageable)	0.181	0.163	0.020	0.018	0.92	10.2%
*	Respiratory Failure	0.116	0.163	0.025	-0.047	-1.86	-40.6%
*	Septicemia	0.089	0.121	0.029	-0.032	-1.09	-35.7%
*	Vascular Ulcer	0.186	0.181	0.027	0.006	0.21	3.0%
*	Viral Hepatitis	0.402	0.310	0.049	0.092	1.87	22.8%
Symptom	Daily Pain	0.061	0.054	0.017	0.007	0.40	11.1%
Functional Status	Bowel Incontinence (Total)	0.185	0.176	0.011	0.009	0.77	4.7%
*	Cognition Not Intact	0.333	0.331	0.011	0.001	0.14	0.4%
*	Eating Dependence	0.472	0.430	0.017	0.042	2.48	8.9%
*	Two-Person Assist for Any ADL	0.239	0.226	0.011	0.013	1.21	5.3%
Treatments Continued from Hospital	Cancer Chemotherapy	0.600	0.595	0.050	0.005	0.10	0.8%
*	Dialysis	0.604	0.606	0.021	-0.002	-0.09	-0.3%
*	Insulin	0.178	0.159	0.015	0.018	1.21	10.3%
*	IV Fluids or Meds	0.188	0.179	0.017	0.009	0.52	4.7%
*	Ostomy Care	0.326	0.349	0.026	-0.023	-0.87	-6.9%
*	Oxygen	0.340	0.346	0.012	-0.007	-0.56	-2.0%
*	Radiation Therapy	0.611	0.489	0.069	0.122	1.77	19.9%
Treatments Continued from Hospital	Tracheostomy Care	0.134	0.170	0.040	-0.037	-0.91	-27.5%
Mitigating Factors	End-Stage Prognosis	-0.785	-0.729	0.056	-0.056	-1.00	7.1%
*	Hospice Care	-1.509	-1.423	0.098	-0.086	-0.87	5.7%

* Cell intentionally left empty

Variable Stability:

TABLE 10: Variable Stability between Two Assessments Seven Days Apart

Variable	% Changing from 0 to 1	% Changing from 1 to 0	% Unchanged	Prevalence of 1s in Validation Sample	Coefficient in Model
Medicare	0%	0%	100%	*	*
Re-entry	1%	1%	99%	*	*
Male	0%	0%	100%	*	*
Age Under 65	0%	0%	100%	*	*
Anemia	2%	2%	98%	*	*
Asthma	1%	2%	99%	*	*
Diabetes Mellitus	1%	1%	99%	*	*
Diabetic Foot Ulcer	0%	0%	100%	*	*
Heart Failure	1%	1%	99%	*	*
Internal Bleeding	0%	0%	100%	*	*
Pressure Ulcer Stage 2	0%	2%	100%	*	*
Pressure Ulcer Stage 3	0%	0%	100%	*	*
Pressure Ulcer Stage 4	0%	0%	100%	*	*
Pressure Ulcer Unstageable	0%	1%	100%	*	*
Respiratory Failure	0%	1%	100%	*	*
Septicemia	0%	1%	100%	*	*
Vascular Ulcer	0%	0%	100%	*	*
Viral Hepatitis	0%	0%	100%	*	*
Daily Pain	2%	4%	98%	*	*
Bowel Incontinence (Total)	7%	9%	93%	49%	0.185
Cognition Not Intact	4%	8%	96%	66%	0.333
Eating Dependence	1%	1%	99%	*	*
Two-Person Assist	4%	14%	96%	57%	0.239
Chemotherapy	0%	1%	100%	*	*
Dialysis	0%	3%	100%	*	*
Insulin	1%	2%	99%	*	*

Variable	% Changing from 0 to 1	% Changing from 1 to 0	% Unchanged	Prevalence of 1s in Validation Sample	Coefficient in Model
IV Fluids or Medications	0%	6%	100%	*	*
Ostomy Care	0%	0%	100%	*	*
Oxygen	0%	18%	100%	22%	0.34
Radiation Therapy	0%	0%	100%	*	*
Tracheostomy Care	0%	1%	100%	*	*
End-Stage Prognosis	0%	0%	100%	*	*
Hospice Care	0%	0%	100%	*	*

* Cell intentionally left empty

[Response Ends]

2b.25. Describe the analyses and interpretation resulting in the decision to select or not select social risk factors.

Examples may include prevalence of the factor across measured entities, availability of the data source, empirical association with the outcome, contribution of unique variation in the outcome, or assessment of between-unit effects and within-unit effects. Also describe the impact of adjusting for risk (or making no adjustment) on providers at high or low extremes of risk.

[Response Begins]

Our overall approach was to begin with reliable and rarely-missing patient-level SDS variables nominated by our clinical experts: Medicaid status (as a proxy for financial assets and income), black versus non-black, Hispanic/Latino versus non-Hispanic/Latino, and the interactions of Medicaid status and race. The significance of these variables in predicting rehospitalization rates was tested in fixed-effects logistic regression models. We reasoned that patient-level effects that were significant in models that included facility-specific constant terms probably reflected otherwise-unmeasured differences in baseline health status. Our final risk adjustment models were single-level logistic regression models in which the coefficients on the SDS variables were forced to be the same as in the fixed-effects model. Essentially this approach adjusts for the *within-facility* differences in rehospitalization rates associated with the SDS factor, but does not adjust for the *between-facility* differences in rehospitalization rates associated with the SDS factor. The within-facility effects are essentially those beyond those associated with facility quality differences. In all cases this made the effect of the SDS variables smaller than it would be in a single-level logistic regression that did not account for facility effects. We did not want to adjust away facility-level effects related to worse care at SNFs with large minority populations.

[Response Ends]

2b.26. Describe the method of testing/analysis used to develop and validate the adequacy of the statistical model or stratification approach (describe the steps—do not just name a method; what statistical analysis was used). Provide the statistical results from testing the approach to control for differences in patient characteristics (i.e., case mix) below. If stratified ONLY, enter "N/A" for questions about the statistical risk model discrimination and calibration statistics.

Validation testing should be conducted in a data set that is separate from the one used to develop the model.

[Response Begins]

A clinical panel reviewed the entire MDS for skilled nursing facilities, identifying items that might be expected on clinical grounds to correlate with 30 day readmission risk, and that would be unlikely to change between the day of hospital discharge and the day of the first MDS assessment – which takes place by day 8 of the stay for all Medicare patients. Such items included demographics, chronic disease diagnoses, treatments begun in the hospital with orders to be continued in the SNF, and functional status items that change slowly when they change at all, such as the patient's needing two-person assistance for transferring and/or bed mobility. These items were screened for significant univariate associations with the dependent variable (readmission to any acute care hospital directly from the SNF within 30 days of admission). This process yielded 39 candidate variables. A logistic regression formula was then estimated utilizing the 39 candidates; this was progressively refined into one that utilized 33 independent variables. The six remaining ones – PTSD, transfusions, tuberculosis, continuing radiation therapy, continuing ventilator status, and continuing suction did not add explained variance if added to a model that already included the 33 actually used. With the exception of ventilator status and suction, the variables all had relatively low prevalence in the model-building sample. Ventilator status and suction were strongly associated with tracheostomy care, so it was not surprising that only one of the three variables was significant in the multivariate model that we ultimately selected for risk adjustment of readmission rates.

[Response Ends]

2b.27. Provide risk model discrimination statistics.

For example, provide c-statistics or R-squared values.

[Response Begins]

The c-statistic of the Pro30 model is 0.669 with a 95% confidence interval (0:6666 -0:6851). This means that there is 67% probability that a case (i.e. a person who gets rehospitalized) has higher predicted risk (i.e. higher estimated logit) than a non-case.

[Response Ends]

2b.28. Provide the statistical risk model calibration statistics (e.g., Hosmer-Lemeshow statistic).

[Response Begins]

The p-value of the Hosmer-Lemeshow statistic for the Pro30 model at the facility level is 0.85, so we accept the hypothesis of no discrepancy between Observed-Expected proportions, concluding that the logistic model is a good fit (well calibrated).

[Response Ends]

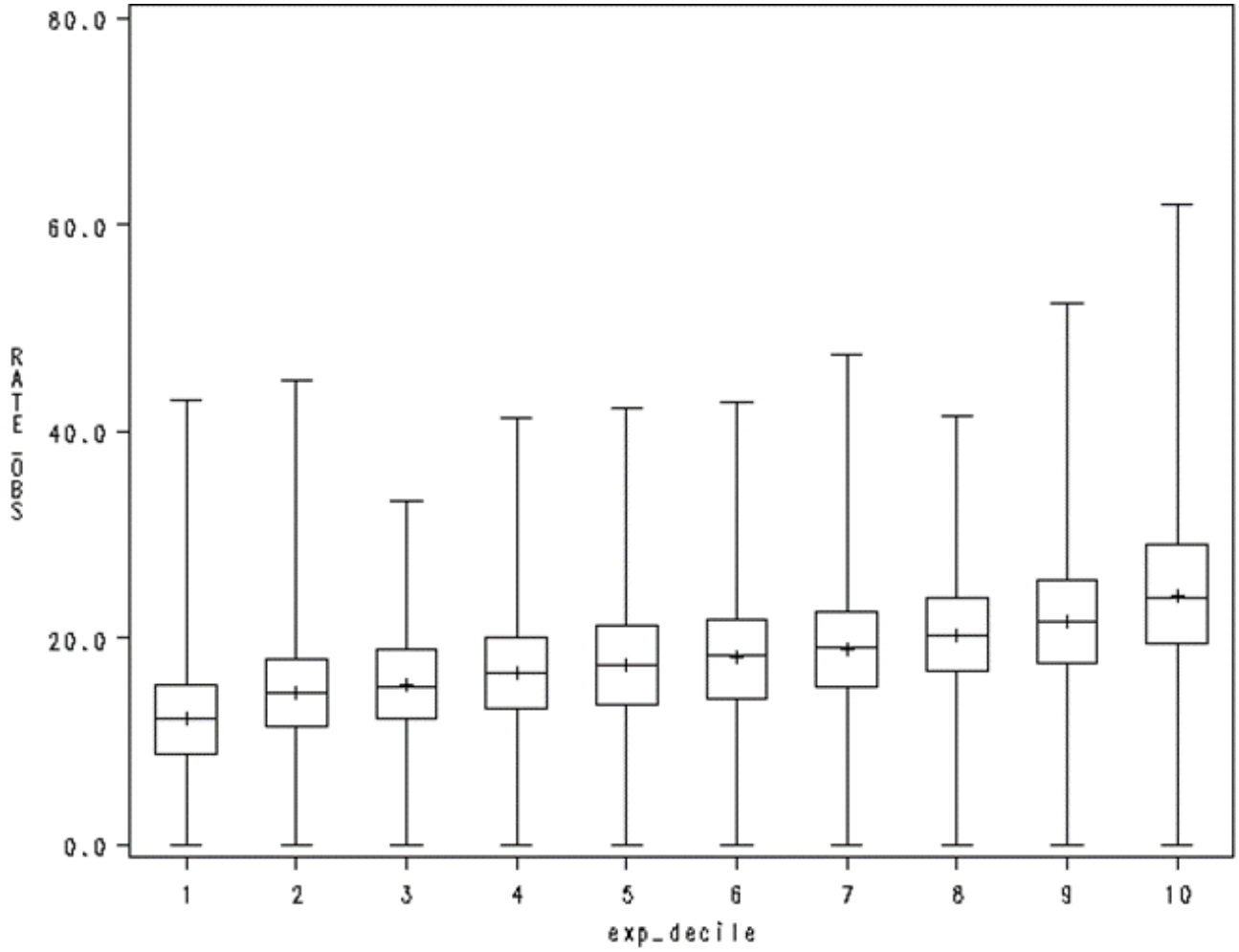
2b.29. Provide the risk decile plots or calibration curves used in calibrating the statistical risk model.

The preferred file format is .png, but most image formats are acceptable.

[Response Begins]

We grouped each facility into risk deciles based on their risk adjusted expected rehospitalization rate and then calculated the actual rate for each decile group. The "box and whisker" plot is shown in the figure below. As expected, the average actual rehospitalization rate increases steadily for each decile increase in expected rehospitalization indicating good calibration.

FIGURE 3. CALIBRATION CURVE OF EXPECTED TO OBSERVED RATE



Calibration curve of expected to observed rate

[Response Ends]

2b.30. Provide the results of the risk stratification analysis.

[Response Begins]

N/A

[Response Ends]

2b.31. Provide your interpretation of the results, in terms of demonstrating adequacy of controlling for differences in patient characteristics (i.e., case mix).

In other words, what do the results mean and what are the norms for the test conducted?

[Response Begins]

N/A

[Response Ends]

2b.32. Describe any additional testing conducted to justify the risk adjustment approach used in specifying the measure.

Not required but would provide additional support of adequacy of the risk model, e.g., testing of risk model in another data set; sensitivity analysis for missing data; other methods that were assessed.

[Response Begins]

N/A

[Response Ends]

Criteria 3: Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

3.01. Check all methods below that are used to generate the data elements needed to compute the measure score.

[Response Begins]

Generated or collected by and used by healthcare personnel during the provision of care (e.g., blood pressure, lab value, diagnosis, depression score)

[Response Ends]

3.02. Detail to what extent the specified data elements are available electronically in defined fields.

In other words, indicate whether data elements that are needed to compute the performance measure score are in defined, computer-readable fields.

[Response Begins]

ALL data elements are in defined fields in electronic clinical data (e.g., clinical registry, nursing home MDS, home health OASIS)

[Response Ends]

3.03. If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using data elements not from electronic sources.

[Response Begins]

N/A

[Response Ends]

3.04. Describe any efforts to develop an eCQM.

[Response Begins]

N/A

[Response Ends]

3.06. Describe difficulties (as a result of testing and/or operational use of the measure) regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.

[Response Begins]

Using the MDS data has allowed us to provide more timely data back to individual providers than using claims, which we initially used. Also, collecting and calculating the measure on a quarterly basis that spans a 12 month period has helped assure fewer facilities with missing rates due to small sample size and has the effect of preventing large fluctuations from measurement period to measurement period due to small sample sizes. Providers have asked for rates that span only one quarter but the number of facilities with the inadequate denominator size of 30 increases and the measure stability is also affected when using only one quarter. However, even with a 12 month window (reported as rolling average each quarter) we still have a number of facilities that cannot have a reported rate or may have a measure one quarter but not another since their total number of admissions from a hospital (denominator size) is close to the minimum number required for reporting (which is 30).

Also, providing information to individuals providers on their data completeness about the use of the MDS discharge assessments (the source for numerator) has helped providers improve their completion of MDS discharge assessment.

We have modified our feedback reports to facilities about their data completeness. We also have had to provide more explanation for how the measure is calculated, so that they can interpret their data. Understanding the risk adjustment method of [actual rate/expected rate] x national average is not self-evident to most providers. However, once explained with examples, they appreciate the method.

We also have modified how long we wait until after the end of the quarter to increase data completeness. Some providers even several months after the close of a quarter have not submitted all of their MDS data to CMS. We have modified our calculations to update their prior quarter's rates when additional MDS data is submitted to CMS. This affects less than 10% of providers and even then most rates do not change significantly. However, providers appreciate having the most accurate and complete data updated for their historical trend analysis.

[Response Ends]

Consider implications for both individuals providing data (patients, service recipients, respondents) and those whose performance is being measured.

3.07. Detail any fees, licensing, or other requirements to use any aspect of the measure as specified (e.g., value/code set, risk model, programming code, algorithm),

Attach the fee schedule here, if applicable.

[Response Begins]

Computation of the measure requires a license to use software for large-scale data management and calculation of risk estimates using logistic regression models. These are capabilities of all typical analytics software packages used by healthcare organizations (e.g., SAS, SPSS, Stata, and R). Healthcare organizations would thus not incur additional expense to implement the measure.

Utilization of the measure specifications does not require a fee. However, there is a requirement that display, disclosure or publication of the measure include the measure's trademark (viz., PointRight® Pro30 Rehospitalization Measure) and that it is indicated that the measure specifications are copyrighted by PointRight ®.

[Response Ends]

Criteria 4: Use and Usability

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

Extent to which intended audiences (e.g., consumers, purchasers, providers, policy makers) can understand the results of the measure and are likely to find them useful for decision making.

NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement, in addition to demonstrating performance improvement.

4a.01.

Check all current uses. For each current use checked, please provide:

Name of program and sponsor

URL

Purpose

Geographic area and number and percentage of accountable entities and patients included

Level of measurement and setting

[Response Begins]

Payment Program

Quality Improvement with Benchmarking (external benchmarking to multiple organizations)

Quality Improvement (Internal to the specific organization)

As the largest trade association for nursing homes with over 9,000 nursing home members, the American Health Care Association (AHCA) launched a multi-year quality initiative to improve nursing home quality. In the latest iteration of this quality initiative, which was launched in 2018, there was a goal for every facility to reduce short-stay rehospitalizations by 10 percent, or maintain a high performance rate of 10 percent or less, by March 2021 as measured by Pro30. AHCA Quality Initiative Issue Brief - https://www.ahcancal.org/Advocacy/IssueBriefs/Issue%20Brief%20AHCA%20QI%202018-2021.pdf#search=quality%20initiative

On a quarterly basis, Pro30 rates are updated on AHCA's LTC Trend Tracker tool for members. Independently owned members, as well as corporate multi-facility members, can track and benchmark their organization's Pro30 performance via LTC Trend Tracker.

Additionally, non-members and the public can download facility-level rates on a quarterly basis from AHCA's website -

https://www.ahcancal.org/Data-and-Research/Pages/PointRight-Downloads.aspx

Two state Medicaid programs utilize Pro30 as part of their value-based purchasing (VBP) or pay for performance (P4P) programs. More information about these two programs below.

California's Quality and Accountability Supplemental Payment (QASP)

- Purpose – Incentivize quality improvement. Pro30 is one of the measures used in the program.
- Geographic Area – California nursing facilities
- Reference URL -

https://www.cdph.ca.gov/Programs/CHCQ/LCP/Pages/QASP.aspx

Hawaii Nursing Facility Pay for Performance

- Purpose – Incentivize quality improvement. Pro30 is one of six quality measures in the program.
- Geographic Area – Hawaii nursing facilities
- Reference URL -

https://www.ahcancal.org/Data-and-Research/Center-for-HPE/Documents/CHPE-Report-A%20Review%20of%20NH%20Medicaid%20VBP%20Programs%2002.23.2022.pdf

Separate from state Medicaid VBP and P4P programs, individual providers and provider networks utilize Pro30 in negotiating reimbursement rates and incentive payments with Medicare Advantage plans, managed care organizations, and other referral partners. Pro30 is utilized in these situations because it is an all-payer measure.

[Response Ends]

4a.02. Check all planned uses.

[Response Begins]

Payment Program

Quality Improvement with Benchmarking (external benchmarking to multiple organizations)

Quality Improvement (internal to the specific organization)

[Response Ends]

4a.03. If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing), explain why the measure is not in use.

For example, do policies or actions of the developer/steward or accountable entities restrict access to performance results or block implementation?

[Response Begins]

N/A

[Response Ends]

4a.04. If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes: used in any accountability application within 3 years, and publicly reported within 6 years of initial endorsement.

A credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.

[Response Begins]

N/A

[Response Ends]

4a.05. Describe how performance results, data, and assistance with interpretation have been provided to those being measured or other users during development or implementation.

Detail how many and which types of measured entities and/or others were included. If only a sample of measured entities were included, describe the full population and how the sample was selected.

[Response Begins]

The measure is available in three Net Health PointRight solutions, PointRight® Pro 30® Rehospitalization, ScoreCard, and QASP. These solutions are available to all Net Health customers who subscribe to them as part of the PointRight product that is delivered as a web-based software application. The measure is provided as part of a comprehensive rehospitalization feature set at the Skilled Nursing Facility (SNF) level, with comparisons to other facilities in the customer's organization, benchmarks (national average of all Net Health customer facilities), trending, and drill-down capabilities to patient-level rehospitalization information.

Over 2,100 Skilled Nursing Facilities aubmit MDS data to Net Health for results in the PointRight® Pro 30® Rehospitalization and PointRight QASP solutions. Results for all facilities in the nation are presented in the PointRight ScoreCard solution.

The measure is used in the State of California's Quality and Accountability Supplemental Payment (QASP) Program, a value-based payment program that incentivizes SNFs to implement quality improvement programs focused on a core set of performance metrics. Over 1,000 California SNFs that qualify for the program use the measure.

[Response Ends]

4a.06. Describe the process for providing measure results, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.

[Response Begins]

Within the Net Health PointRight® Pro 30® Rehospitalization and PointRight QASP solutions, results are updated on an ongoing basis, daily in near real-time and based on the most recent MDS data submitted to Net Health by the Skilled Nursing Facility. In the PointRight ScoreCard solution, where information is available for all the facilities in the nation, results are updated on a monthly basis (rehospitalization data for all facilities in the nation are provided by the American Healthcare Association).

Educational materials are available on-demand for users of the PointRight® Pro 30® Rehospitalization and PointRight QASP solutions. These resources include short video tutorials explaining the PointRight® Pro 30® and how it is used in the applications, and Frequently Asked Questions related to the measure calculation, its population, and data elements. In addition, clinical help desk consultation is available for clients who have specific questions.

The California Department of Public Health/Department of Health Care Services calculates PointRight® Pro 30® rates for Quality and Accountability Supplemental Payment (QASP) Program participant facilities on a quarterly basis to establish program benchmarks and following the conclusion of each program year to determine incentive payments.

[Response Ends]

4a.07. Summarize the feedback on measure performance and implementation from the measured entities and others. Describe how feedback was obtained.

[Response Begins]

Net Health customers share feedback about the measure in direct conversations with Analytics, Product Management, Sales, and Client Services team members. They also submit feedback through in-application messaging, via email, and in conjunction with their responses to Net Promoter Score (NPS) customer satisfaction surveys.

[Response Ends]

4a.08. Summarize the feedback obtained from those being measured.

[Response Begins]

Net Health PointRight customers use PointRight® Pro 30® to monitor and manage their rehospitalization outcomes. By evaluating their performance on rehospitalization, they are able to conduct data-driven quality assessment and performance improvement. By sharing their performance with healthcare partners, they position their facilities for success in competitive markets with key referral sources and payers.

Skilled Nursing Facilities have shared with Net Health that using the measure has enabled them to:

- Secure a competitive position as a preferred partner for post-acute care.
- Achieve and sustain excellence in reducing their rehospitalization rate.
- Leverage the benefits of communicating their rehospitalization performance with stakeholders using a standard, risk-adjusted, NQF-endorsed measure.
- Prepare for and best position their organizations for value-based incentives and penalties.

The following are provided as representative examples of feedback and outcomes from users of the measure.

Samantha Broussard, RN, Director of Clinical Operations, Plantation Management, stated, "With PointRight analytics, I'm able to get up-to-date and accurate information when it's needed. With rapid healthcare changes, we need to have access to our data so we can present it to the organizations that may request it. One example is rehospitalization. We use PointRight to help decrease readmissions by identifying residents at high risk."

ArchCare, the Continuing Care Community of the Archdiocese of New York, integrated PointRight® Pro 30® into clinical practice, resulting in reduced rehospitalizations. By monitoring the measure and performing root cause analysis, along with ensuring that patients at risk receive the monitoring, assessment, and intervention needed to prevent hospitalization, ArchCare was able to improve rehospitalization outcomes to a point of excellence.

As stated by Mitch Marsh, SVP residential Services, ArchCare "…improved health outcomes, reduced hospitalizations, improved resident/family experience. In addition, we ensured that an already strong referral pipeline remained robust even through COVID." The full case study can be accessed here:

https://leadingage.org/sites/default/files/Improving%20Health%20Outcomes%20through%20Data%20Analytics.pdf

Cambridge Health Alliance, a Boston-based health system with a high-performing SNF network, was able to demonstrate a 25% reduction in 30-day rehospitalizations by 25% from January 2020 to January 2021 by using PointRight® Pro 30®. The full case study can be accessed here:

https://content.nethealth.com/cambridge-health-alliance

[Response Ends]

4a.09. Summarize the feedback obtained from other users.

[Response Begins]

N/A

[Response Ends]

4a.10. Describe how the feedback described has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.

[Response Begins]

In August 2015, AHCA and PointRight submitted an analysis plan for our participation in NQF's Socio-Demographic Status (SDS) Trial Period project. AHCA and PointRight proposed to analyze a wide array of sociodemographic factors targeting seven domains: age, sex, race, marital status, language, race and poverty. Upon recommendation by NQF we limited the list of patient-level sociodemographic variables that were analyzed to marital status, race, and Medicaid enrollment. Based on our analyses (included in the appendix), a model including the factors did not explain more variance in outcome that the model without such factors; and incorporating sociodemographic factors in risk adjustment did not change the overall appraisal of clinical performance for providers. It was therefore decided to not modify the PointRight ® Pro 30 ® measure.

[Response Ends]

4b.01. You may refer to data provided in Importance to Measure and Report: Gap in Care/Disparities, but do not repeat here. Discuss any progress on improvement (trends in performance results, number and percentage of people receiving high-quality healthcare; Geographic area and number and percentage of accountable entities and patients included). If no improvement was demonstrated, provide an explanation. If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

[Response Begins]

Skilled Nursing Facilities and organizations comprised of multiple Skilled Nursing Facilities have demonstrated improvement in their rehospitalization rates. Two representative examples of improvement from ArchCare, the Continuing Care Community of the Archdiocese of New York (Figure 1), and Nexus in Maryland (Figure 2) appear below.

Figure 1: Median PointRight® Pro30® adjusted rate and return to community LOS for all-payer residents

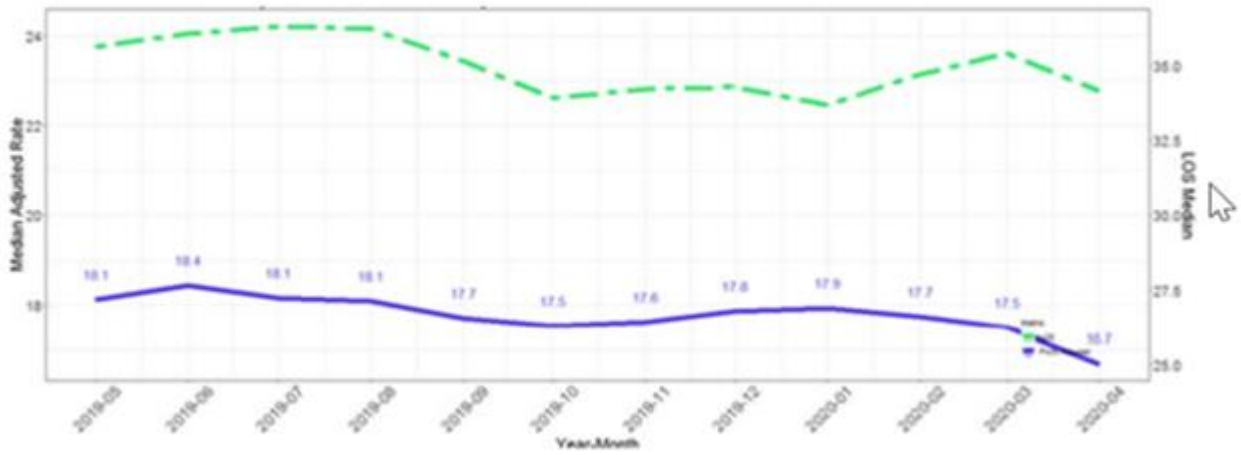
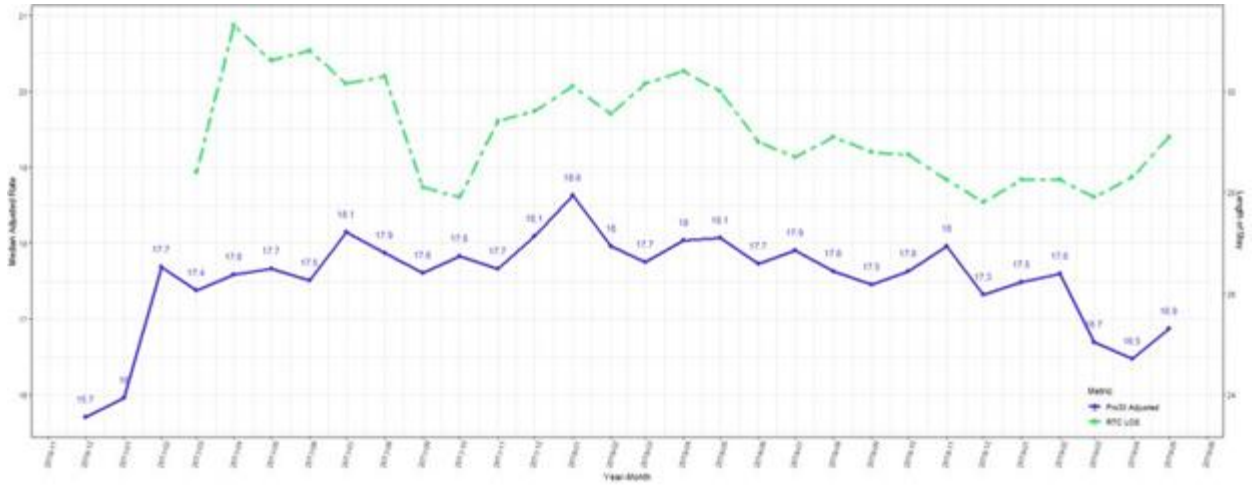


Figure 2: Median PointRight ® Pro 30 ® adjusted rate and return to community LOS for all-payer residents of major MD collaborative (Nexus)



Data for rehospitalizations for all SNFs nationally through the fourth quarter of 2020 are shown in Section 1b.2.

[Response Ends]

4b.02. Explain any unexpected findings (positive or negative) during implementation of this measure, including unintended impacts on patients.

[Response Begins]

None identified.

[Response Ends]

4b.03. Explain any unexpected benefits realized from implementation of this measure.

[Response Begins]

None identified.

[Response Ends]

Criteria 5: Related and Competing Measures

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

If you are updating a maintenance measure submission for the first time in MIMS, please note that the previous related and competing data appearing in question 5.03 may need to be entered in to 5.01 and 5.02, if the measures are NQF endorsed. Please review and update questions 5.01, 5.02, and 5.03 accordingly.

5.01. Search and select all NQF-endorsed related measures (conceptually, either same measure focus or target population).

(Can search and select measures.)

[Response Begins]

2827: PointRight® Pro Long Stay(TM) Hospitalization Measure

2510: Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

[Response Ends]

5.02. Search and select all NQF-endorsed competing measures (conceptually, the measures have both the same measure focus or target population).

(Can search and select measures.)

[Response Begins]

2510: Skilled Nursing Facility 30-Day All-Cause Readmission Measure (SNFRM)

[Response Ends]

5.03. If there are related or competing measures to this measure, but they are not NQF-endorsed, please indicate the measure title and steward.

[Response Begins]

Percentage of Short-Stay Residents Who Were Re-Hospitalized After a Nursing Home Admission by CMS and Abt Associates (Reference - https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/CertificationandComplianc/Downloads/Nursing-Home-Compare-Claims-based-Measures-Technical-Specifications-April-2019.pdf)

[Response Ends]

5.04. If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s), indicate whether the measure specifications are harmonized to the extent possible.

[Response Begins]

Yes

[Response Ends]

5.05. If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.

[Response Begins]

Currently, there is one NQF-endorsed (SNFRM) and one non-NQF-endorsed (Abt Associates) measure for short-stay rehospitalizations of nursing home residents in the public domain. Both of these measures are Medicare claims-based. Thus, they cannot capture all of the rehospitalizations that occur during a SNF stay that Pro30 can through all-payer MDS data. Though both claims measures can capture rehospitalizations that occur post SNF stay and are still within 30 days of SNF admission. Because MDS and claims are required for reimbursement and federal regulatory compliance, these measures add no additional data collection burden to providers.

[Response Ends]

5.06. Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality). Alternatively, justify endorsing an additional measure.

Provide analyses when possible.

[Response Begins]

PointRight Pro30 should be considered a valuable complementary measure to the two Medicare claims-based measures in the public domain. As a MDS-based measure, Pro30 can capture rehospitalizations that Medicare claims will miss and thus provide a wider perspective of a facility's ability to avoid rehospitalizations. Additionally, as an MDS-based measure, providers can calculate and track their performance closer to real-time than with claims.

[Response Ends]