

## Full Measure Submission to PQM

**Instructions:** You must complete all required fields (denoted by \*) to submit your measure. You may save your progress as a draft prior to submitting your measure.

Some fields are required only if your measure is an electronic Clinical Quality Measure (eCQM), an initial (new) measure, or a maintenance measure. These are indicated at the beginning of the questions in brackets, e.g., *[For initial submissions only]*.

### Measure Specifications

**Note:** *If you have changes to information submitted via the Intent to Submit, please edit the original content for the Full Measure Submission.*

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**If applicable, provide a rationale for why measured entities should report this measure with other measures to appropriately interpret results. \***

Many patients who receive home health care are recovering from an injury or illness and may have difficulty walking or moving around safely. They may need help from a person or special equipment (like a walker or cane) to accomplish this activity. Home health care staff can encourage patients to be as independent as possible and can evaluate patients' needs for, and teach them how to use, special devices or equipment to help increase their ability to perform some activities without the assistance of another person. Safe ambulation and mobility are critical to being able to remain at home. Improving functional status such as a patient's ability to perform ambulation/locomotion, contributes to quality of life and allows them to live safely and as long as possible in their own environment. Getting better at walking or moving around may be a sign that they are meeting the goals of their care plan or that their health status is improving. Recovering independence in walking or moving around with assistive devices is often a rehabilitative goal for home health patients, making it a reasonable evaluation indicator of effective and high-value home health care.

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**Provide a URL to a web page specific for this measure containing current detailed specifications, including code lists, risk model details, and supplemental materials. \***

*Do not enter a URL to a home page or to general information. If no URL is available, indicate "not available."*

[Home Health Quality Measures | CMS](#)

[Home Health Quality Reporting Program Measure Calculations and Reporting User's Manual, Version 2.0 \(cms.gov\)](#)

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*[If the measure is an eCQM]* If your measure is an electronic clinical quality measure (eCQM), please attach the zipped output from the Measure Authoring Tool (MAT). \*

Not Applicable.

*If you did not use the MAT, please contact [PQM Support](#). Use the specification fields for the plain-language description of the specifications.*

MAT output attached

MAT output not attached (explain) **This measure is not an eCQM.**

If you select "MAT output not attached" a text box will open for you to provide an explanation.

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**Do you have a data dictionary, code table, or value sets (and risk model codes and coefficients, if applicable)? \***

Yes

No

Attached Excel or csv file -- attach file here if answered yes

*Please put all information into one workbook. Excel formats are preferred (.xlsx or .csv).*

If no, attest that all information will be provided in other fields in the submission.

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**Provide details needed to calculate the numerator. \***

*All information required to identify and calculate the cases from the target population (denominator) with the target process, condition, event, or outcome such as definitions, time period for data collection, specific data collection items/responses, code/value sets. If your list of codes with descriptors is greater than will fit in this text box you must attach an excel or csv file in the previous question. Please provide lists of individual codes with descriptors that exceed one page in an Excel or csv file in response to the field requesting the data dictionary, code table, or value sets.*

The number of home health episodes of care from the denominator in which the value recorded for the OASIS item M1860 ("Ambulation/Locomotion") on the discharge assessment is numerically less than the value recorded on the start (or resumption) of care assessment, indicating less impairment at discharge compared to start/resumption of care.

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**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. Please provide lists of individual codes with descriptors that exceed one page in an Excel or csv file in response to the field requesting the data dictionary, code table, or value sets.*

Home health episodes ending with a discharge during the reporting period (M0100[2]=09), other than those covered by generic or measure-specific exclusions.

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**Describe denominator exclusions. \***

*Briefly describe exclusions from the denominator cases, if any. Enter "None" if the measure does not have denominator exclusions.*

All home health episodes for which the patient, at start/resumption of care, was able to ambulate/locomote independently (M1860[1] = 00), or the patient was nonresponsive (M1700[1] = 04 or M1710[1] = NA or M1720[1] = NA), or the episode is covered by the generic exclusions (see following section).

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**Provide details needed to calculate denominator exclusions. \***

*Enter "None" if the measure does not have 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. If the lists of codes with descriptors exceeds one page in Word, then please provide these lists in an Excel or csv file in response to the field requesting the data dictionary, code table, or value sets.*

Home health episodes of care for which (1) at start/resumption of care, OASIS item M1860 "Ambulation/ Locomotion" = 0, indicating that the patient was able to ambulate independently; or (2) at start/resumption of care, OASIS-E item M1700 "Cognitive Functioning" is 4, or M1710 "When Confused" is NA, or M1720 "When Anxious" is NA, indicating the patient is non-responsive; or (3) The patient did not have a discharge assessment because the episode of care ended in transfer to inpatient facility or death at home; or (4) the episode is covered by one or more of the generic exclusions:

- a. Pediatric home health patients (less than 18 years of age).
- b. Home health patients receiving maternity care only.
- c. Home health patients receiving non-skilled care only.
- d. Home health patients for which neither Medicare nor Medicaid are a payment source.
- e. The episode of care does not end during the reporting period.
- f. If the home health agency sample includes fewer than 20 episodes after all other patient-level exclusions are applied, or if the agency has been in operation less than six months, then the data is suppressed from public reporting on Home Health Compare.
- g. Hospice exclusion: Episodes of care that end in a non-institutional hospice on or after January 1, 2023 are excluded: M2420 "Discharge Disposition" is 3 and M0100 "Reason For Assessment" is 9.

**Table 1** provides the episode counts by exclusion criterion for episodes of care that started and ended in CY 2022. In CY 2022, 1,658,640 episodes of care were excluded from the denominator for *Improvement in Ambulation/Locomotion (#0167)* due to meeting at least one exclusion criterion. Approximately 94,000 episodes of care in CY 2022 ended in a discharge to non-institutional hospice. This exclusion criterion is only applicable to episodes of care ending on or after January 1, 2023 and is therefore not listed in **Table 1**.

**Table 1: Episodes Excluded from Denominator for Improvement in Ambulation/Locomotion (#0167), CY 2022**

Exclusion Criteria	Episode Count
Patient is non-responsive at SOC/ROC (M1700[1] = "04")	76,560
Patient is non-responsive at SOC/ROC (M1710[1] = "NA")	13,171
Patient is non-responsive at SOC/ROC (M1720[1] = "NA")	16,571
Patient died or was transferred to inpatient facility at EOC (M0100[2] ≠ "09")	1,548,958
Totally independent at SOC/ROC (no room for improvement)	66,518
<b>Sum of Excluded Episodes*</b>	<b>1,658,640</b>
Numerator (Eligible Episodes that Improved)	3,749,362
Denominator (All Eligible Episodes)	4,421,900
Denominator (All Eligible Episodes for Home Health Agencies with ≥ 20 Episodes)	4,407,460

Note: EOC = End of Care. SOC = Start of Care. ROC = Resumption of Care.

\* Sum may be lower than the sum of individual exclusion criteria due to some episodes qualifying for more than one exclusion category.

**Please select the most relevant type of score. \***

- Categorical, e.g., yes/no
- Continuous variable, e.g., average
- Count
- Rate/proportion
- Composite scale
- Other scoring method  
Please specify (text box)

**Select the appropriate interpretation of the measure score. \***

- Better quality = Higher score
- Better quality = Lower score
- Better quality = Score within a defined interval
- Passing score defines better quality
- N/A

Please specify (text box) For example, cost and efficiency measures

**Diagram or describe the calculation of the measure score as an ordered sequence of steps. \***

*Identify the denominator, denominator exclusions, denominator exceptions, numerator, numerator exclusions, time period of data collection, risk adjustment, and any other calculations.*

Upload diagram if applicable (file types: PDF, visio, jpg, png)

**S.14. Calculation Algorithm/Measure Logic**

1. Define an episode of care (the unit of analysis): Data from matched pairs of OASIS assessments for each episode of care (start or resumption of care paired with a discharge or transfer to inpatient facility) are used to calculate individual patient outcome measures.

2. Identify target population: All quality episodes of care ending during a specified time interval (usually a period of twelve months), subject to generic and measure-specific exclusions. Cases meeting the target outcome are those where the patient is more independent in ambulation/mobility at discharge than at start/resumption of care: M1860\_CRNT\_AMBLTN [2] < M1860\_CRNT\_AMBLTN [1].

3. Aggregate the Data: The observed outcome measure value for each home health agency is calculated as the percentage of cases meeting the target population (denominator) criteria that meet the target outcome (numerator) criteria.

4. Risk Adjustment: The expected probability for a patient is calculated using the following formula:

$$P(x) = 1 / (1 + e^{-(a + \sum b_i x_i)})$$

Where:

- $P(x)$  = predicted probability of achieving outcome  $x$
- $a$  = constant parameter listed in the model documentation
- $b_i$  = coefficient for risk factor  $i$  in the model documentation
- $x_i$  = value of risk factor  $i$  for this patient

Predicted probabilities for all patients included in the measure denominator are then averaged to derive an expected outcome value for the home health agency. This expected value is then used, together with the observed (unadjusted) outcome value and the expected value for the national population of patients for the same data collection period, to calculate a risk-adjusted outcome value for the home health agency. The formula for the adjusted value of the outcome measure is as follows:

$$X(A_{ra}) = X(A_{obs}) + X(N_{exp}) - X(A_{exp})$$

Where:

- $X(A_{ra})$  = Agency risk-adjusted outcome measure value
- $X(A_{obs})$  = Agency observed outcome measure value
- $X(A_{exp})$  = Agency expected outcome measure value
- $X(N_{exp})$  = National expected outcome measure value

If the result of this calculation is a value greater than 100%, the adjusted value is set to 100%. Similarly, if the result is a negative number the adjusted value is set to zero.

**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. Please provide lists of individual codes with descriptors that exceed one page in an Excel or csv file in response to the field requesting the data dictionary, code table, or value sets.*

Not Applicable.

**Select the data sources for which you have tested and specified the measure. \***

*Select all that apply.*

- Administrative Data
- Claims Data
- Electronic Health Records
- Other Electronic Clinical Data
- Paper Patient Medical Records
- Registries
- Standardized Patient Assessments
- Patient-Reported Data and/or Survey Data (*opens the questions noted below if selected*)
- Non-Medical Data
- Other Data Source

*Please specify (text box)*

*If you selected Patient-Reported Data and/or Survey Data you will see these questions:*

**Provide the survey, tool, questionnaire, or scale used as a data source for your measure.**

- Available at measure-specific web page (provide the URL)

*Please specify (text box)*

- Attached

**Please indicate the responder for your survey, tool, questionnaire, or scale.**

- Patient
- Family or other caregiver
- Clinician
- Other

*Please specify (text box)*

**Are proxy responses allowed?**

- Yes
- No

**If yes, please describe how. \***

*Required if checked yes above*

**For survey/patient-reported data, provide instructions for data collection and guidance on minimum response rate. Provide the data needed to calculate the response rates for reporting with performance measure results. \***

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**Identify the specific data source or data collection instrument. \***

*For example, provide the name of the database, clinical registry, collection instrument, and describe how the measured entities will collect the data (e.g., the standard methods, modes, and languages of administration).*

[OASIS Data Sets | CMS](#)

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**Indicate whether the measure has a minimum sample size to calculate the measure and provide any instructions needed for obtaining the sample and guidance on minimal sample size. \***

**Not Applicable.**

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## Importance

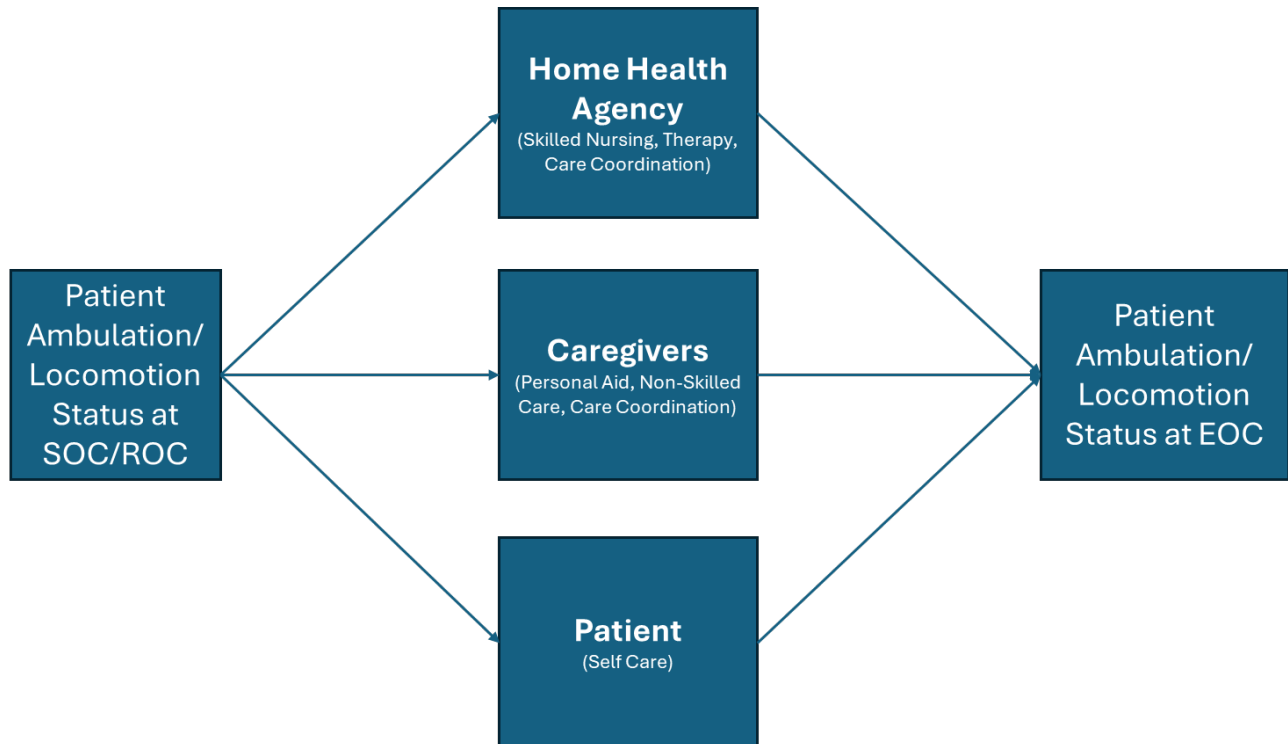
Attach a logic model and provide a description of the relationship between structures and processes and the desired outcome. \*

Briefly describe the steps between the health care structures and processes (e.g., interventions, or services) and the desired 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.

Attachment (pdf, word)

*Improvement in Ambulation/Locomotion (#0167)* measures whether the patient's ambulation/locomotion status at end of care (EOC) improves relative to the patient's ambulation/locomotion status at start or resumption of care (SOC/ROC). To improve, patients will receive support from three primary sources: their home health agency, caregivers, and themselves. For *Improvement in Ambulation/Locomotion (#0167)*, we are concerned with attributing the improvement to the home health agency's care. Thus, we risk-adjust the observed improvement to account for differences in patient characteristics at SOC/ROC (see **Figure 1** for a visual depiction of the logic model).

**Figure 1: Logic Model for Improvement in Ambulation/Locomotion (#0167)**



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**Summarize evidence of measure importance from the literature, linking the structure/process/intermediate outcome to the desired health outcome. \***

*Please cite supporting evidence.*

Many patients who receive home health care are recovering from injury, surgery or an illness that affects their ability to safely ambulate in their home environment and beyond. Decreased ability or difficulty with ambulation can lead to an increased risk of falls, hospitalization, and functional decline which also increases the risk of becoming homebound, particularly in older adults (Leppä et al., 2021; Meijers et al., 2012; Robinson et al., 2022). Difficulty with ambulation is one of the main reasons that patients are referred to post-acute care services like home health (Prvu Bettger et al., 2015). Mobility directly impacts performance of activities of daily living (ADLs) like transferring, toileting, and bathing as well as instrumental activities of daily living (IADLs) like shopping, preparing meals, and doing housework. Ambulation is an essential part of home health patients' safety, contributes to quality of life and allows them to live as long as possible in their home environment. Interventions offered by home health such as physical and occupational therapy are effective strategies for helping patients maintain or improve their ability to ambulate safely in the home. The utilization of physical therapy services in home health is associated with an increased likelihood of being able to successfully be discharged into the community without hospital readmission (Knox et al., 2022). Measures related to ambulation and ADL function have been shown to be related to the overall quality of a home health agency and can help detect disparities in care for populations using home health services (Chase et al., 2018; Fashaw-Walters et al., 2022).

Chase, J.-A. D., Huang, L., Russell, D., Hanlon, A., O'Connor, M., Robinson, K. M., & Bowles, K. H. (2018). Racial/ethnic disparities in disability outcomes among post-acute home care patients. *Journal of aging and health, 30*(9), 1406-1426.

Fashaw-Walters, S. A., Rahman, M., Gee, G., Mor, V., White, M., & Thomas, K. S. (2022). Out Of Reach: Inequities In The Use Of High-Quality Home Health Agencies: Study examines inequities in the use of high-quality home health agencies. *Health Affairs, 41*(2), 247-255.

Knox, S., Downer, B., Haas, A., & Ottenbacher, K. J. (2022). Home health utilization association with discharge to community for people with dementia. *Alzheimer's & Dementia: Translational Research & Clinical Interventions, 8*(1), e12341.

Leppä, H., Karavirta, L., Rantalainen, T., Rantakokko, M., Siltanen, S., Portegijs, E., & Rantanen, T. (2021). Use of walking modifications, perceived walking difficulty and changes in outdoor mobility among community-dwelling older people during COVID-19 restrictions. *Aging Clinical and Experimental Research, 33*(10), 2909-2916.

Meijers, J. M. M., Halfens, R., Neyens, J. C., Luiking, Y., Verlaan, G., & Schols, J. (2012). Predicting falls in elderly receiving home care: the role of malnutrition and impaired mobility. *The journal of nutrition, health & aging, 16*(7), 654-658.

Prvu Bettger, J., McCoy, L., Smith, E. E., Fonarow, G. C., Schwamm, L. H., & Peterson, E. D. (2015). Contemporary trends and predictors of postacute service use and routine discharge home after stroke. *Journal of the American Heart Association, 4*(2), e001038.

Robinson, T. N., Carmichael, H., Hosokawa, P., Overbey, D. M., Goode, C. M., Barnett Jr, C. C., . . . Jones, T. S. (2022). Decreases in daily ambulation forecast post-surgical re-admission. *The American Journal of Surgery, 223*(5), 857-862.

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**[For initial endorsement] If implemented, what is the measure's anticipated impact on important outcomes? \***

*Please cite evidence to identify adverse events and costs avoided. Cite business case, if applicable.*

Not Applicable.

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**[For maintenance review] Provide evidence of performance gap or measurement gap by providing performance scores on the measure as specified (current and over time) at the specified level of analysis. \***



Please include mean, standard deviation, minimum, maximum, interquartile range, and scores by deciles. Describe the data source including number of measured entities, number of patients, dates of data. If a sample, provide characteristics of the entities included. If performance scores are unavailable for the measure, please explain.

*Improvement in Ambulation/Locomotion (#0167)* is calculated using CMS's Home Health Quality Reporting Program's assessment tool, the Outcome and Assessment Information Set (OASIS). All components of the measure are defined using data from the OASIS, including the numerator, denominator, exclusions, and risk factors. The measure is risk adjusted to account for patient characteristics at the start of care or resumption of care (SOC/ROC). The denominator consists of unique quality episodes, i.e. a SOC/ROC assessment paired with an end of care (EOC) assessment.

While all the data used to report results in this form are derived from the OASIS, the periods used to generate results vary. Trends are presented from calendar year 2019 (CY 2019) to CY 2022. We restrict descriptive characteristics, reliability, and validity to CY 2022, the most recent calendar year of data currently available. The results generated for risk adjustment use CY 2021 data, the data used during the most recent maintenance reevaluation and risk adjustment update.

**Table 2** presents performance for *Improvement in Ambulation/Locomotion (#0167)* from CY 2019 to CY 2022 among home health agencies that exceed the public reporting threshold of at least 20 quality episodes of care. Overall, mean performance has been trending upwards, with a low of 0.760 in CY 2019 and a high of 0.798 in CY 2022. The lower and upper bounds of the interquartile range have also increased with each year. Despite the steady increases year-over-year, there remains a performance gap for *Improvement in Ambulation/Locomotion (#0167)*. Fewer than 70 percent of quality episodes exhibit improvement among the lowest quartile of home health agencies, and between 20 and 25 percent of quality episodes fail to improve for the average home health agency (see **Tables 2** and **3**).

Aside from CY 2020, which was affected by the COVID public health emergency reporting requirements, roughly 4.4 million quality episodes are used to score the measure. The measure is publicly reported for over 7,000 home health agencies.

**Table 2: Risk-adjusted Performance by Year among Home Health Agencies Exceeding the Public Reporting Threshold (n>=20)**

CY	2019	2020	2021	2022
<b>Mean</b>	0.760	0.769	0.783	0.798
<b>Standard Deviation</b>	0.134	0.142	0.145	0.148
<b>Minimum</b>	0.129	0.121	0.000	0.000
<b>Maximum</b>	1.000	1.000	1.000	1.000
<b>Interquartile Range</b>	[0.700, 0.845]	[0.708, 0.862]	[0.722, 0.877]	[0.740, 0.896]
<b>Home Health Agencies (N)</b>	7,411	7,277	7,455	7,628
<b>Total Episodes (N)</b>	4,463,184	4,158,959	4,396,642	4,407,460

**Table 3** presents performance for *Improvement in Ambulation/Locomotion (#0167)* for CY 2022 by home health agency size among home health agencies that exceed the public reporting threshold. From bottom decile to top decile, the distribution in performance is tight with a minimum at Decile 1 of 0.678 and a maximum at Decile 9 of 0.863, a 0.185 difference in mean score. Smaller home health agencies perform worse on the measure, with Deciles 1 to 4 performing lower than the overall mean score and Deciles 5 to 10 performing higher.

**Table 3: CY 2022 Risk-Adjusted Performance by Home Health Agency Size Decile among Home Health Agencies Exceeding the Public Reporting Threshold (n>=20)**

	Overall	Decile									
		1	2	3	4	5	6	7	8	9	10
<b>Mean Score</b>	0.798	0.678	0.729	0.753	0.779	0.796	0.824	0.839	0.858	0.863	0.861
<b>Home Health Agencies (N)</b>	7,628	776	757	770	749	762	765	762	763	762	762
<b>Total Episodes (N)</b>	4,407,460	21,568	37,470	59,605	87,796	133,995	199,740	299,379	464,732	778,829	2,324,346



[For initial endorsement] Please explain why existing measures/quality improvement programs are insufficient for addressing this health care need. \*

Not Applicable.

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Provide evidence the target population (e.g., patients) values the measured outcome, process, or structure, and finds it meaningful. \*

Please describe how and from whom you obtained input.

The public can comment on the home health quality program when a notice of proposed rulemaking is published as well as through the consensus-based entity public commenting. No comments have been received during this time period regarding this measure. The target of this performance-based measure is the Medicare-certified home health agency. Functional status was confirmed as a domain of importance for quality measurement at a recent Technical Expert Panel (TEP).

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## Feasibility

[For Initial Endorsement] Describe the feasibility assessment conducted showing you considered the people, tools, tasks, and technologies necessary to implement this measure. If an eCQM, please also attach your completed [feasibility scorecard](#). \*

Please explain and upload the [feasibility scorecard](#) if applicable.

Not Applicable.

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Describe how the feasibility assessment informed the final measure specifications, indicating any decisions made to adjust the measure in response to feasibility assessment. \*

OASIS data collection and submission are a requirement of the Medicare Home Health Conditions of Participation. Functional assessment is conducted as part of usual clinical practice, and information on ambulation status used to calculate this measure is recorded in the relevant OASIS items embedded in the home health agency's clinical assessment. OASIS data are collected by the home health agency during the care episode and submitted electronically to CMS via the Internet Quality Improvement and Evaluation System (iQIES). No issues regarding availability of data, missing data, timing or frequency of data collection, patient confidentiality or implementation have become apparent since OASIS-E was implemented January 1, 2023.

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Indicate whether your measure or any of its components are proprietary, with or without fees. \*

- Proprietary measure or components (e.g., risk model, codes)
  - Proprietary measure or components with fees
  - Not a proprietary measure and no proprietary components
- 

Describe 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). \*

Required if checked in previous question that this is a proprietary measure or components (with or without fees)

None.

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## Scientific Acceptability

Describe the data or sample used for testing (include dates, source). If you used multiple data sources for different aspects of testing (e.g., reliability, validity, risk adjustment), identify how the data or sample are different for each aspect of testing. \*

While all the data used to report results in this form are derived from the OASIS, the periods used to generate results vary. We restrict descriptive characteristics, reliability, and validity to CY 2022, the most recent calendar year of data currently available, and the results generated for exclusions and risk adjustment use CY 2021 data, the data used during the most recent maintenance reevaluation and risk adjustment update.

**Please provide descriptive characteristics of measured entities included in the analysis (e.g., size, location, type). \***

*If you used a sample, describe how you selected measured entities for inclusion in the sample.*

**Table 4** identifies the publicly reporting home health agencies by size and Census region. This distribution of home health agencies is used for reliability and validity testing. 7,628 home health agencies have 20 or more quality episodes starting and ending in CY 2022.

**Table 4:** CY 2022 Home Health agency Characteristics among Home Health Agencies Exceeding the Public Reporting Threshold (n>=20)

Home Health Agency Group		Number of Home Health Agencies	Percent of Home Health Agencies
	Total	7,628	100%
Size	Quartile 1 (20 to 76 episodes)	1,928	25.28%
	Quartile 2 (77 to 212 episodes)	1,886	24.72%
	Quartile 3 (213 to 604 episodes)	1,908	25.01%
	Quartile 4 (605 to 40,175 episodes)	1,906	24.99%
Location of Home Health Agency by Census Region	Northeast	600	7.87%
	Midwest	1,682	22.05%
	South	3,088	40.48%
	West	2,217	29.06%
	Missing	41	0.54%

**Identify the number and descriptive characteristics (e.g., age, sex, race, diagnosis), of the level(s) of analysis, for example, patient, encounter or episode, separated by level of analysis and data source. \***

*If you used a sample, describe how you selected the patients for inclusion in the sample. If there is a minimum case count used for testing, you must reflect that minimum in the specifications.*

**Table 5** identifies the patient characteristics of quality episodes treated by publicly reporting home health agencies. Characteristics are reported by sex, race, age, and Census region. This distribution of quality episodes is used for reliability and validity testing. 4,407,460 quality episodes started and ended in CY 2022 and met the denominator exclusion and public reporting requirements.

**Table 5:** CY 2022 Patient Characteristics for Quality Episodes of Care for Home Health Agencies Exceeding the Public Reporting Threshold (n>=20)

Population Group		Number of Episodes	Percent of Episodes
	Total	4,407,460	100.00%
Sex	Male	1,720,839	39.04%
	Female	2,686,621	60.96%
Race	White	3,391,802	76.96%
	Black	535,728	12.16%

	Hispanic	328,896	7.46%
	Other	151,034	3.43%
Age	Under 65	598,554	13.58%
	65-74	1,283,559	29.12%
	75-84	1,464,101	33.22%
	85 and Over	1,061,246	24.08%
Location of Home Health Agency by Census Region	Northeast	900,322	20.43%
	Midwest	892,959	20.26%
	South	1,764,145	40.03%
	West	822,867	18.67%
	Missing	27,167	0.62%

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If there are differences in the data or sample used for different aspects of testing (e.g., reliability, validity, exclusions, risk adjustment), please identify how the data or sample are different for each aspect of testing. \*  
Not Applicable.

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## Reliability

Select the level of reliability testing conducted. \*

*Please select all that apply.*

Patient or Encounter-Level (e.g., inter-abstractor reliability)

Accountable Entity-Level (e.g., signal-to-noise analysis)

Not applicable

*Please explain why reliability testing was not conducted*

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For each level of reliability testing conducted, 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? Provide the statistical analysis used.*

Below, we address reliability at two levels: (1) the performance measure and (2) the underlying data element: OASIS item M1860 (Ambulation/Locomotion: Current ability to walk safely, once in a standing position, or use a wheelchair, once in a seated position, on a variety of surfaces).

Reliability of the Performance Measure Score: Abt measured the extent to which differences in each quality measure were due to actual differences in agency performance versus variation that arises from measurement error.

Statistically, reliability depends on performance variation for a measure across agencies, the random variation in performance for a measure within an agency's panel of attributed beneficiaries, and the number of beneficiaries attributed to the agency. High reliability for a measure suggests that comparisons of relative performance across agencies are likely to be stable over different performance periods, and that the performance of one agency on the quality measure can confidently be distinguished from another. Potential reliability values range from zero to one, where one (highest possible reliability) means that all variation in the measure's rates is the result of variation in differences in performance across agencies, while zero (lowest possible reliability) means that all variation is a result of measurement error.

To assess measure reliability, Abt used a split-half reliability test. First, we randomly divided each publicly reporting home health agency's quality episodes into two separate equally sized groups. Then, we calculated risk-adjusted performance rates for each group. Then, using the paired performance rates, we calculated the absolute agreement intra-class correlation statistic or ICC(2,1) with a Spearman-Brown correction to address the artificial reduction in home health agency size by half. Additionally, we recalculate ICC(2,1) within each agency size decile, where size is measured as the number of quality episodes treated after denominator and public reporting exclusions.

- Reliability of the Underlying Data Element: The measure is calculated by comparing patient functioning at the start and end of a home health quality episode, as reported by the home health OASIS data set. Patient ability to ambulate is based on response to OASIS item M1860 (Ambulation/Locomotion: Current ability to walk safely, once in a standing position, or use a wheelchair, once in a seated position, on a variety of surfaces):
  0. Able to independently walk on even and uneven surfaces and negotiate stairs with or without railings (i.e., needs no human assistance or assistive device).
  1. With the use of a one-handed device (e.g. cane, single crutch, hemi-walker), able to independently walk on even and uneven surfaces and negotiate stairs with or without railings.
  2. Requires use of a two-handed device (e.g., walker or crutches) to walk alone on a level surface and/or requires human supervision or assistance to negotiate stairs or steps or uneven surfaces.
  3. Able to walk only with the supervision or assistance of another person at all times.
  4. Chairfast, unable to ambulate but is able to wheel self independently.
  5. Chairfast, unable to ambulate and is unable to wheel self.
  6. Bedfast, unable to ambulate or be up in a chair.

In 2016 and 2017, Abt and partners conducted a field test of new and existing OASIS items on 12 home health agencies in four states for 213 home health patients.<sup>1</sup> Home health registered nurses and physical therapists, trained by the study team, collected data during home visits at start of care (SOC) or resumption of care (ROC), and/or at discharge. Follow-up visits were conducted within 24 hours of the initial field test visit, by a different registered nurse or physical therapist to test interrater reliability. M1860 was one of the existing OASIS items that was tested. Interrater reliability was assessed for SOC or ROC and at Discharge with a linear weighted kappa. The number patients for which inter-rater reliability could be tested was 105 at SOC/ROC and 83 at discharge.

The kappa statistic is generally considered to be the “gold standard” statistic associated with item reliability as it factors in the possibility of chance agreement. Kappa values are reported as decimal values between 0.00 (poor) and 1.00 (perfect). These can be interpreted using the following seven categories:<sup>2</sup>

- Poor < 0.10
- Slight = 0.10 to 0.20
- Fair = 0.21 to 0.40
- Moderate = 0.41 to 0.60
- Substantial = 0.61 to 0.80
- Near perfect = 0.81 to 0.99
- Perfect = 1.00

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**Provide the statistical results from reliability testing for each level of reliability testing conducted. \***

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**If you conducted accountable entity-level testing, provide the reliability results for each decile in the table.**

- **Reliability of the Performance Measure Score:** Table 6 summarizes the distribution of reliability scores for the 7,628 home health agencies exceeding the public reporting threshold of at least 20 eligible quality episodes of care.

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<sup>1</sup> Abt Associates (2018). “OASIS Field Test Summary Report: Outcome and Assessment Information Set (OASIS) Quality Measure Development and Maintenance Project.”

<sup>2</sup> Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics*, 1977. 33(1):159-174.

**Table 6: CY 2022 Split-Half Reliability among Home Health Agencies Exceeding the Public Reporting Threshold (n>=20)**

	Overall	Decile									
		1	2	3	4	5	6	7	8	9	10
Reliability	0.933	0.853	0.903	0.929	0.951	0.955	0.961	0.970	0.968	0.983	0.988
Home Health Agencies (N)	7,628	776	757	770	749	762	765	762	763	762	762
Total Episodes (N)	4,407,460	21,568	37,470	59,605	87,796	133,995	199,740	299,379	464,732	778,829	2,324,346

- **Reliability of the Underlying Data Element:** The inter-rater reliability (weighted kappa) values for M1860 Ambulation/Locomotion was 0.43 at SOC/ROC and 0.67 at discharge.

**Provide your interpretation of the results in terms of demonstrating reliability. \***

*How do the results support an inference of reliability for the measure?*

- **Reliability of the Performance Measure Score:** The ICC(2,1) statistics exceed 0.800, even within the decile with the smallest home health agencies, suggesting strong reliability and acceptability for drawing inferences about home health agencies.
- **Reliability of the Underlying Data Element** Based on the weighted kappa statistics the inter-rater reliability indicated moderate agreement at SOC/ROC (0.43) and substantial agreement at discharge (0.67). Given the scale of the response to this item (seven possible responses), we conclude that the item achieves sufficient reliability.

## Validity

**Select the level of validity testing conducted. \***

*Please select all that apply.*

Patient or Encounter-Level (e.g., sensitivity and specificity)

Accountable Entity Level (e.g., criterion validity)

Not applicable

*Please explain why validity testing was not conducted*

**If validity testing was performed, select the type of validity testing conducted. \***

*Please select all that apply.*

Empirical validity testing

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

**For each level of testing conducted, describe the method of validity testing and what it tests. \***

*Describe the steps, do not just name a method and what you tested (e.g., accuracy of data elements compared with authoritative source, relationship to another measure as expected). What statistical analysis did you use? Include analysis of missing data and any exclusions.*

Below, we address validity at two levels: (1) the performance measure and (2) the underlying data element - OASIS item M1860 (Ambulation/Locomotion: Current ability to walk safely, once in a standing position, or use a wheelchair, once in a seated position, on a variety of surfaces).

- **Validity of the Performance Measure Score:** Abt assessed the convergent validity of the measure. Convergent validity refers to the extent to which measures that are designed to assess the same construct are related to each other. To evaluate the convergent validity of the measure, Abt calculated the Spearman rank correlations of the *Improvement in Ambulation/Locomotion (#0167)* measure with other relevant OASIS-based measures and the fee-for-service (FFS) claims-based measure *Discharge to Community (#3477)* measure.

The Spearman rank correlation assesses the statistical dependence between the rankings of two variables. In our case, we rank home health agencies according to the *Improvement in Ambulation/Locomotion (#0167)* measure and other home health agency-level measures. High correlation or association between the *Improvement in Ambulation/Locomotion (#0167)* measure and other functional measures of improvement would be expected and desired. Low correlation would indicate that the measure may not be valid (is not measuring what we think it is measuring). We only expect a positive correlation with *Discharge to Community (#3477)*, as the population differs by payer (FFS versus FFS, Medicare Advantage, and Medicaid) and the numerator criteria measure different outcomes (successful discharge to community versus improvement in function).

- **Validity of the Underlying Data Element:** The OASIS item M1860: Ambulation/Locomotion has been used continuously as part of the OASIS since 2001. The behaviorally benchmarked responses were updated and improved based on input from clinicians and technical experts. The OASIS instrument has been published in the Federal Register for comment (both items and measures based off those items) and no objections or suggestions for revision have been noted regarding the response options.

The original OASIS item was originally carefully designed for measuring and ultimately enhancing patient outcomes as part of the National OBQI Demonstration project (1995 – 2000). OASIS items were derived by first specifying a set of patient outcomes considered critical by home care experts (e.g., nurses, physicians, therapists, social workers, administrators) for evaluating the effectiveness of care. These outcomes were chosen from the most important domains of health status addressed by home care providers. OASIS data items were developed, tested in hundreds of agencies, and refined for measuring outcomes to evaluate and enhance the effectiveness of home care. OASIS data items and measurement methods were reviewed by multidisciplinary panels of research methodologists, clinicians, home care managers, and policy analysts. Several tests of validity were conducted for each OASIS item, including Ambulation/Locomotion. Validity testing included:

- 1) Consensus validity by expert researcher/clinical panels for outcome measurement and risk factor measurement
- 2) Consensus validity by expert clinical panels for patient assessment and care planning
- 3) Criterion or convergent/predictive validity for outcome measurement/risk factor measurement
- 4) Convergent/predictive validity: case mix adjustment for payment
- 5) Validation by patient assessment and care planning

Descriptions for these validation assessments are taken from the “Volume 4: OASIS Chronicle and Recommendation” OASIS and Outcome-Based Quality Improvement in Home Health Care, November 2001, Center for Health Services Research, University of Colorado Health Sciences Center, Denver, CO.

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**Provide the statistical results from validity testing for each level of validity testing conducted. \***

- **Validity of the Performance Measure Score:** Table 7 shows the Spearman rank correlations of the *Improvement in Ambulation/Locomotion (#0167)* measure with other publicly reported measures of home health quality derived from OASIS assessments and Medicare Fee-for-Service (FFS) claims.

**Table 7: CY 2022 Convergent Validity among Home Health Agencies Exceeding the Public Reporting Threshold ( $n \geq 20$ )**

Home Health Quality Measures	Spearman Rank Correlations
Improvement in Bathing (#0174)	0.8464
Improvement in Bed Transferring (#0175)	0.7610
Improvement in Management of Oral Medications (#0176)	0.7506
Discharge to Community (Claims-based) (#3477)	0.2511

- Validity of the Underlying Data Element:** As noted above,
  - Consensus validity:** The item was reviewed by panels of researchers and clinicians and was recommended for measuring patient outcomes relevant to home health care provision and quality measurement, or for risk adjustment of outcome analyses.
  - Consensus validity by expert clinical panels for patient assessment and care planning:** The item was reviewed by a panel of clinical experts and was recommended for inclusion in a core set of data items for patient assessment and care planning.
  - Criterion or convergent/predictive validity for outcome measurement/risk factor measurement:** The item was tested empirically for use in conjunction with outcome measures or risk factors predictive of patient outcomes. The item was found to be related to other indicators of health status and patient outcomes in a statistically significant and clinically meaningful way.
  - Convergent/predictive validity:** Case-mix adjustment for payment: The item was tested and is used in the grouping algorithm that, in part, determines the per-episode payment to home health agencies for care provided under the Medicare home health benefit.
  - Validation by patient assessment and care planning:** The item has been used by clinicians for patient assessment and care planning in several hundred home health agencies and has been reported by practicing clinicians to be effective and useful for these purposes.

Results of these validation assessments are taken from the "Volume 4: OASIS Chronicle and Recommendation" OASIS and Outcome-Based Quality Improvement in Home Health Care, November 2001, Center for Health Services Research, University of Colorado Health Sciences Center, Denver, CO.

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**Provide your interpretation of the results in terms of demonstrating validity. \***

*How do the results support an inference of validity for the measure?*

- Validity of the Performance Measure Score:** As detailed in **Table 7**, the *Improvement in Ambulation/Locomotion (#0167)* measure displays a statistically significant positive correlation with several publicly reported measures that similarly assess patient functioning and *Discharge to Community (#3477)*, which lends evidence to the measure's validity. It may be that strong performance on the other OASIS-based measures directly leads to an improvement in ambulation/locomotion. It may also be the case that high quality agencies perform well on both the *Improvement in Ambulation/Locomotion (#0167)* measure and other OASIS-based measures of patient functioning and communication due to cultural or organization-level factors.
  - Validity of the Underlying Data Element:** Item validity was established based on results of testing described above. In addition, the item was also reviewed as part of the OMB/PRA review process for the most recent OASIS data set revision which allowed for two national comment periods (60 days and 30 days) wherein the face validity of the item was supported by the comments received.
-



## Risk Adjustment

### Check all methods used to address risk factors \*

- Statistical risk model with risk factors  
*Specify number of risk factors (text box)*
- Stratification by risk category  
*Specify number of categories (text box)*
- Other  
*Specify other (text box)*
- No risk adjustment or stratification.  
*If select no, this question appears*  
Is the measure an outcome or resource measure?
  - Yes
  - No

*IF you select yes this question appears:* **If an outcome or resource use measure is not risk adjusted or stratified, provide rationale and analyses to demonstrate there is no need to control for differences in patient characteristics (i.e., case mix) to achieve fair comparisons across measured entities. \***

*The following questions are shown and required if the user selects Statistical risk model with risk factors, Stratification by risk category or Other above:*

---

**Attach a conceptual model that illustrates the pathway between the social and/or functional status-related risk factors, patient clinical factors, quality of care, and the measured outcome. Please explain the rationale for the model. \***

*Consider age, gender, race/ethnicity, urbanicity/rurality, Medicare/Medicaid dual eligibility status, indices of social vulnerability (e.g., Centers for Disease Control and Prevention [Social Vulnerability Index](#)), and markers of functional risk in the conceptual model. If social and/or functional risk factors are not available but are included in the conceptual model, consider potential bias in the risk model, and describe its direction and magnitude. Address the validity of the measure in light of this bias.*

#### *Attachments (word, pdf)*

A patient's improvement in ambulation/locomotion is dependent on a variety of factors, including social risk factors, clinical and behavioral risk factors, and access to care. The conceptual model shown in **Figure 2** is inspired by a similar conceptual model proposed by the Committee on Accounting for Socioeconomic Status in Medicare Payment Programs. In this conceptual model, social risk factors influence access to care and clinical and behavioral risk factors, as well as the measure itself. In turn, clinical and behavioral risk factors influence health care and resource use, access to care, and the measure itself. Access to care only influences health care and resource use. Finally, the affects the measure through interventions like skilled nursing, therapy, and care coordination. These interventions may be able to address some social, clinical, or behavioral risk factors, in part if not fully.

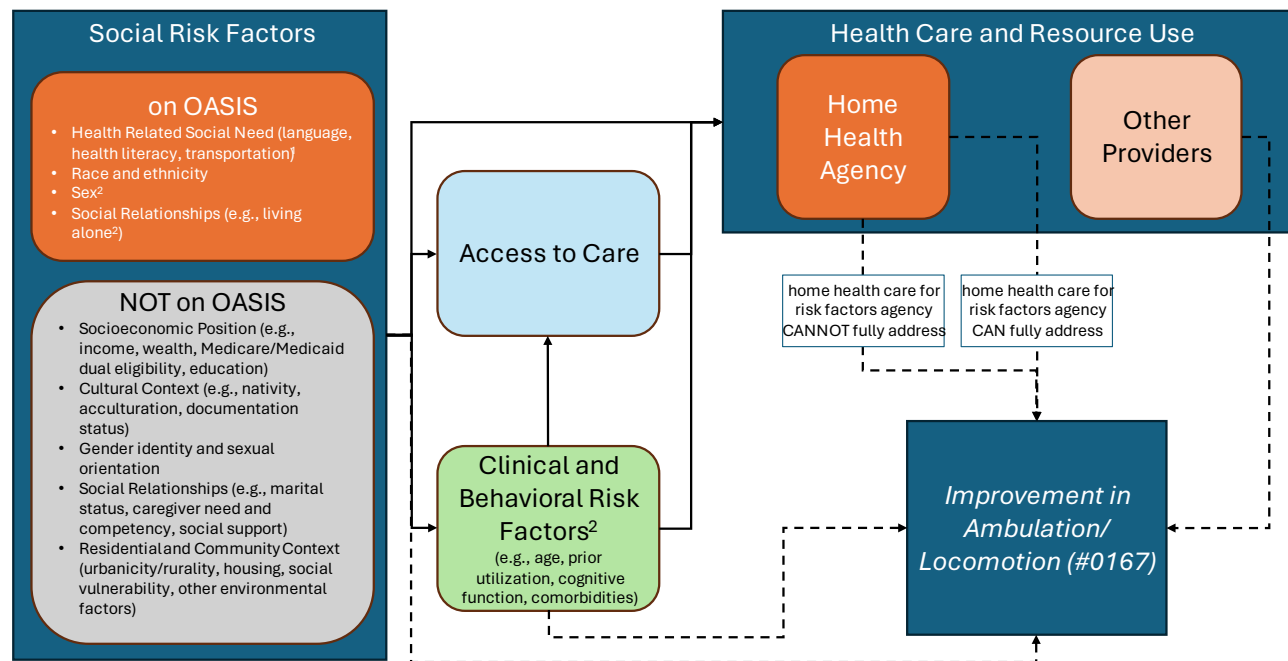
*Improvement in Ambulation/Locomotion (#0167)* attempts to measure a home health agency's ability to improve patient ambulation/locomotion while the patient is in its care; however, because certain factors are outside of its control, we risk-adjust the measure. Risk adjustment is used to promote incentives for home health agencies to provide the same care to patients regardless of patient characteristics at SOC/ROC.

The risk factors that can be fully addressed should not be included in the risk adjustment model because the home health agency is expected to be responsible for addressing that risk factor. For instance, if all other risk factors are identical, a home health agency is expected to provide two patients with identical quality care regardless of race or ethnicity.

By contrast, a patient who is living alone will have different needs than a patient who lives in a congregate setting. While a home health agency is expected to adapt its care to different living situations, it is not expected to address all the needs for a patient living alone, like having professionals on staff readily available during emergencies. Similarly,

a home health agency is not expected to influence the patient’s clinical and behavioral status at SOC/ROC. As a result, relevant clinical and behavioral risk factors to ambulation/locomotion are included in the risk adjustment model.

**Figure 2: A Conceptual Model**



<sup>1</sup> Health related social need items were added to OASIS in 2023 and are not a part of this submission.

<sup>2</sup> Selected in current risk adjustment model

Source: National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Health Care Services; Board on Population Health and Public Health Practice; Committee on Accounting for Socioeconomic Status in Medicare Payment Programs; Steinwachs DM, Stratton K, Kwan LY, editors. Washington (DC): National Academies Press (US); 2017 May 18.

**Provide descriptive statistics on the distribution across the measured entities of the risk variables identified in the conceptual model. \***

**Table 8** shows the mean and standard deviation of the observed value for *Improvement in Ambulation/Locomotion (#0167)* by risk factor in CY 2022.

**Table 8: Observed Improvement in Ambulation/Locomotion (#0167): Mean and Standard Deviation, CY 2022**

Risk Factor	Mean	Std. Dev
Age: 0-54	0.823	0.382
Age: 55-59	0.843	0.363
Age: 60-64	0.847	0.360
Age: 70-74	0.881	0.324
Age: 75-79	0.869	0.338
Age: 80-84	0.850	0.357
Age: 85-89	0.828	0.377
Age: 90-94	0.798	0.401
Age: 95+	0.752	0.432
Ambulation/Locomotion: Two-handed device/human assist on steps	0.624	0.484
Ambulation/Locomotion: Walks only with supervision or assist	0.907	0.290
Ambulation/Locomotion: Chairfast or bedfast	0.718	0.450

Risk Factor	Mean	Std. Dev
Anxiety: Less often than daily	0.841	0.366
Anxiety: Daily, but not constantly	0.830	0.375
Anxiety: All of the time	0.840	0.366
Availability of Assistance: Around the clock	0.837	0.370
Availability of Assistance: Regular daytime	0.855	0.352
Availability of Assistance: Regular nighttime	0.881	0.323
Bathing: With the use of devices in shower/tub	0.641	0.480
Bathing: With intermittent assistance in shower/tub	0.780	0.414
Bathing: Participates with supervision in shower/tub	0.872	0.335
Bathing: Independent at sink, in chair, or on commode	0.834	0.372
Bathing: Participates with assist at sink, in chair, or commode	0.897	0.304
Bathing: Unable to participate; bathed totally by another	0.672	0.470
Behavioral: Impaired decision making	0.786	0.410
Behavioral: None	0.874	0.332
Behavioral: Verbally disruptive, physical aggression, disruptive, or delusional	0.699	0.459
Frequency of Disruptive Behavior: Once a month or less	0.817	0.387
Frequency of Disruptive Behavior: Several times a month	0.807	0.395
Frequency of Disruptive Behavior: Several times a week	0.811	0.391
Frequency of Disruptive Behavior: At least once daily	0.794	0.405
Bowel Incontinence Frequency: Less than once a week	0.806	0.395
Bowel Incontinence Frequency: One to three times a week	0.736	0.441
Bowel Incontinence Frequency: Four to six times a week or more	0.620	0.485
Bowel Incontinence Frequency: Ostomy for bowel elimination	0.828	0.377
Cognitive Functioning: Requires prompting under stress	0.840	0.367
Cognitive Functioning: Requires assist in special circumstances	0.773	0.419
Cognitive Function: Requires considerable assist/totally dependent	0.641	0.480
Confused: In new or complex situations	0.843	0.364
Confused: Sometimes	0.767	0.423
Confused: Constantly	0.628	0.483
Dyspnea: Walking more than 20 feet, climbing stairs	0.871	0.335
Dyspnea: Moderate exertion	0.855	0.352
Dyspnea: Minimal to no exertion	0.861	0.346
Eating: Requires set up, intermittent assist or modified consistency	0.863	0.344
Eating: Unable to feed self and must be assisted throughout meal	0.745	0.436
Eating: Requires tube feedings, or no nutrients orally or via tube	0.708	0.455
Patient is male	0.851	0.356
HCC: Lymphoma and other cancers	0.834	0.372
HCC: Ischemic or unspecified stroke	0.707	0.455
HCC: Hemiplegia/hemiparesis	0.774	0.418
HCC: Monoplegia, other paralytic syndromes	0.819	0.385
HCC: Atherosclerosis of the extremities with ulceration or gangrene	0.766	0.423
HCC: Vascular disease	0.835	0.371

<b>Risk Factor</b>	<b>Mean</b>	<b>Std. Dev</b>
HCC: Chronic obstructive pulmonary disease	0.856	0.351
HCC: Fibrosis of lung and other chronic lung disorders	0.857	0.350
HCC: Aspiration and specified bacterial pneumonias	0.809	0.393
HCC: Dialysis status	0.789	0.408
HCC: Chronic kidney disease, stage 5	0.818	0.386
HCC: Chronic kidney disease, severe (stage 4)	0.837	0.370
HCC: Pressure ulcer of skin with necrosis through to muscle, tendon, or bone	0.475	0.499
HCC: Pressure ulcer of skin with full thickness skin loss	0.617	0.486
HCC: Pressure ulcer of skin with partial thickness skin loss	0.677	0.468
HCC: Chronic ulcer of skin, except pressure	0.793	0.405
HCC: Hip fracture/dislocation	0.814	0.390
HCC: Traumatic amputations and complications	0.776	0.417
HCC: Diabetes with chronic complications	0.839	0.367
HCC: Major organ transplant or replacement status	0.902	0.298
HCC: Amputation status, lower limb/amputation complications	0.738	0.440
HCC: Protein-calorie malnutrition	0.808	0.394
HCC: Morbid obesity	0.860	0.347
HCC: End-stage liver disease	0.829	0.377
HCC: Cirrhosis of liver	0.841	0.366
HCC: Inflammatory bowel disease	0.888	0.315
HCC: Bone/joint/muscle infections/necrosis	0.844	0.363
HCC: Severe hematological disorders	0.844	0.363
HCC: Dementia with complications	0.710	0.454
HCC: Dementia without complication	0.748	0.434
HCC: Quadriplegia	0.469	0.499
HCC: Paraplegia	0.496	0.500
HCC: Spinal cord disorders/injuries	0.776	0.417
HCC: Amyotrophic lateral sclerosis and other motor neuron disease	0.536	0.499
HCC: Cerebral palsy	0.612	0.487
HCC: Myasthenia gravis/myoneural disorders and Guillain-Barre syndrome/inflammatory and toxic neuropathy	0.837	0.369
HCC: Muscular dystrophy	0.660	0.474
HCC: Multiple sclerosis	0.719	0.450
HCC: Parkinson's and Huntington's diseases	0.769	0.421
HCC: Seizure disorders and convulsions	0.795	0.404
HCC: Metastatic cancer and acute leukemia	0.757	0.429
HCC: Coma, brain compression/anoxic damage	0.762	0.426
HCC: Congestive heart failure	0.843	0.364
HCC: Lung and other severe cancers	0.832	0.374
Discharged from post-acute facility in past 14 days	0.852	0.355
Living Arrangement: Lives alone	0.884	0.320
Living Arrangement: Lives in congregate setting (ALF)	0.752	0.432

Risk Factor	Mean	Std. Dev
Ability to Dress Lower Body: Needs clothing/shoes laid out	0.794	0.404
Ability to Dress Lower Body: Assist needed putting on clothing	0.879	0.326
Ability to Dress Lower Body: Entirely dependent upon someone else	0.784	0.412
Management of Oral Meds: Advance dose prep/chart needed	0.782	0.413
Management of Oral Meds: Reminders needed	0.831	0.375
Management of Oral Meds: Unable	0.870	0.337
Payment Source: Medicaid only	0.839	0.368
Payment Source: Medicare HMO only	0.849	0.359
Payment Source: Medicare and Medicaid	0.802	0.399
Payment Source: Other Combination	0.865	0.341
PHQ2to9: No Depression Screening	0.500	0.707
Pressure ulcer: Stage II or higher or unstageable present	0.650	0.477
Risk for Hospitalization: Difficulty complying with medical instruction in past 3 months	0.858	0.349
Risk for Hospitalization: Reports exhaustion	0.862	0.345
Risk for Hospitalization: History of falls in past 12 months	0.849	0.358
Risk for Hospitalization: Multiple hospitalizations in past 6 months	0.844	0.363
Risk for Hospitalization: None of the above	0.819	0.385
Risk for Hospitalization: Recent mental/emotional decline in past 3 months	0.849	0.358
Resumption of Care	0.785	0.411
Start of Care from Community	0.815	0.388
Supervision and Safety: Caregiver provides	0.826	0.379
Supervision and Safety: Caregiver uncertain	0.860	0.347
Supervision and Safety: Caregiver needs training	0.856	0.351
Status of Surgical Wound: Epithelialized	0.904	0.295
Status of Surgical Wound: Fully granulating or early/partial granulation	0.874	0.332
Status of Surgical Wound: Not healing	0.920	0.272
Stasis Ulcer: 1 observable stasis ulcer	0.788	0.409
Stasis Ulcer: Multiple observable stasis ulcers	0.763	0.425
Toilet Hygiene Assistance: Needs supplies laid out	0.845	0.362
Toilet Hygiene Assistance: Needs assistance	0.883	0.322
Toilet Hygiene Assistance: Entirely dependent	0.721	0.448
Toilet Transferring: To/from/on/off toilet with human assist	0.875	0.331
Toilet Transferring: Able to self-transfer to bedside commode	0.866	0.341
Toilet Transferring: Unable to transfer to/from toilet or commode	0.767	0.422
Transferring: With minimal human assist or with device	0.781	0.414
Transferring: Bears weight and pivots only	0.888	0.315
Transferring: Unable or bedfast	0.754	0.430
Urinary incontinence/catheter: Catheter	0.734	0.442
Urinary incontinence/catheter: Incontinent	0.820	0.384

If using statistical risk models, provide detailed risk model specifications (query or algorithm), including the risk model method, risk factor data sources, and equations. Please attach an excel file providing the risk factors, coefficients, codes with descriptors, and definitions. \*

*Attachment (excel)*

The risk adjustment methodology used is based on logistic regression analysis which results in a statistical prediction model for each outcome measure. For each patient who is included in the denominator of the outcome measure, the model is used to calculate the predicted probability that the patient will experience the outcome. The predicted probability for a patient is calculated using the following formula:

$$P(x) = 1 / (1 + e^{-(a + \sum b_i x_i)})$$

Where:

$P(x)$  = predicted probability of achieving outcome  $x$   
 $a$  = constant parameter listed in the model documentation  
 $b_i$  = coefficient for risk factor  $i$  in the model documentation  
 $x_i$  = value of risk factor  $i$  for this patient

Predicted probabilities for all patients included in the measure denominator are then averaged to derive an expected outcome value for the agency. This expected value is then used, together with the observed (unadjusted) outcome value and the expected value for the national population of patients for the same data collection period, to calculate a risk-adjusted outcome value for the . The formula for the adjusted value of the outcome measure is as follows:

$$X(A_{ra}) = X(A_{obs}) + X(N_{exp}) - X(A_{exp})$$

Where:

$X(A_{ra})$  = Agency risk-adjusted outcome measure value  
 $X(A_{obs})$  = Agency observed outcome measure value  
 $X(A_{exp})$  = Agency expected outcome measure value  
 $X(N_{exp})$  = National expected outcome measure value

If the result of this calculation is a value greater than 100%, the adjusted value is set to 100%. Similarly, if the result is a negative number the adjusted value is set to zero.

For a more detailed summary of risk adjustment specifications including definitions of the risk factors, please consult the Home Health Quality Reporting Program [Risk Adjustment Technical Specifications 2024 \(PDF\)](#).<sup>3</sup>

### **Detail the statistical results of the analysis used to test and select risk factors for inclusion in or exclusion from the risk model/stratification. \***

The risk adjustment model was developed using OASIS national repository data from assessments submitted between January 1, 2021, and December 31, 2021 (~6.2 million quality episodes). The population of 6.2 million quality episodes for calendar year 2021 was split in half such that 3.1 million quality episodes were used as a developmental sample and 3.1 million quality episodes were used as a validation sample. The following process was used to identify unique contributing risk factors to the prediction model:

1. Risk factors were identified based on OASIS items that will remain or will be added following the transition to OASIS-E. The statistical properties of the items were examined to specify risk factors (e.g., item responses were grouped when there was low prevalence of certain responses). Team clinicians then reviewed all risk factors for clinical relevance and redefined or updated risk factors as necessary. These risk factors were divided into 31 content focus groups (e.g., functional status, Hierarchical Condition Categories, etc.). Where possible, risk factors were defined such that they flagged mutually exclusive subgroups within each content focus group. When modelling these risk factors, the exclusion category was set to be either the risk factor flag for most independent or the most frequent within each content focus group.
2. A logistic regression specification was used to estimate coefficients among the full set of candidate risk factors. Those risk factors that are statistically significant at probability <0.0001 are flagged for further review in Step 3.
3. Each risk factor flagged in Step 2 was reviewed to determine which one of the two groups its content focus group resided. Either its content focus group was explicitly tiered by increasing severity or it was not. This

<sup>3</sup> <https://www.cms.gov/files/document/risk-adjustment-technicalspecifications2024.pdf>

classification determined which risk factor covariates were kept and which were dropped from the final risk adjustment specification. For content focus groups that are explicitly tiered by increasing severity, either all risk factors are included within a content focus group or none of them. For example, if response option levels 1 and 2 for M1800 Grooming were statistically significant at a probability of  $<0.0001$  for a particular outcome, then response option level 3 for M1800 Grooming was added to the list even if it was not statistically significant. If none of the risk factors within an explicitly tiered content focus group was statistically significant at  $<0.0001$ , the entire content focus group was removed from the model.

4. A logistic regression was computed on the list of risk factors kept after Step 3 above.
5. Goodness of fit and reliability statistics (McFadden's  $R^2$ , C-statistic, and Intra-Class Correlation) were calculated to measure how well the predicted values generated by the prediction model were related to the actual outcomes. Separate bivariate correlations were constructed between the risk factors and the outcomes to confirm the sign and strength of the estimated coefficients in the logistic model.
6. The initial model was reviewed by a team of at least three experienced home health clinicians. Each risk factor was reviewed for its clinical plausibility. Clinicians were asked about the direction indicated by the coefficient in the risk adjustment model and how it compares to their perceived bivariate relationship given their experience treating patients in the home. Risk factors that were not clinically plausible were revised or eliminated if revisions were not possible.
7. The risk factors that were deemed not clinically plausible were revised or eliminated, and Steps 3, 4, and 5 in this process were repeated. The resulting logistic regression equation was designated as the risk adjustment model for the outcome.
8. The risk adjustment model was applied to the validation sample and goodness of fit statistics were computed. The statistics were similar to the goodness of fit statistics computed with the development sample. As additional testing, home health agencies were stratified across several observable characteristics, and the distributions of the risk-adjusted outcomes were checked to confirm that values remained similar across strata.

Using CY 2021 data, the updated risk adjustment model specification yielded a McFadden's  $R^2$  of 0.156 and a C-Statistic of 0.785 on the validation sample. Please refer to **Appendix A** for details on the risk factor coefficients, including standard deviations and p-values.

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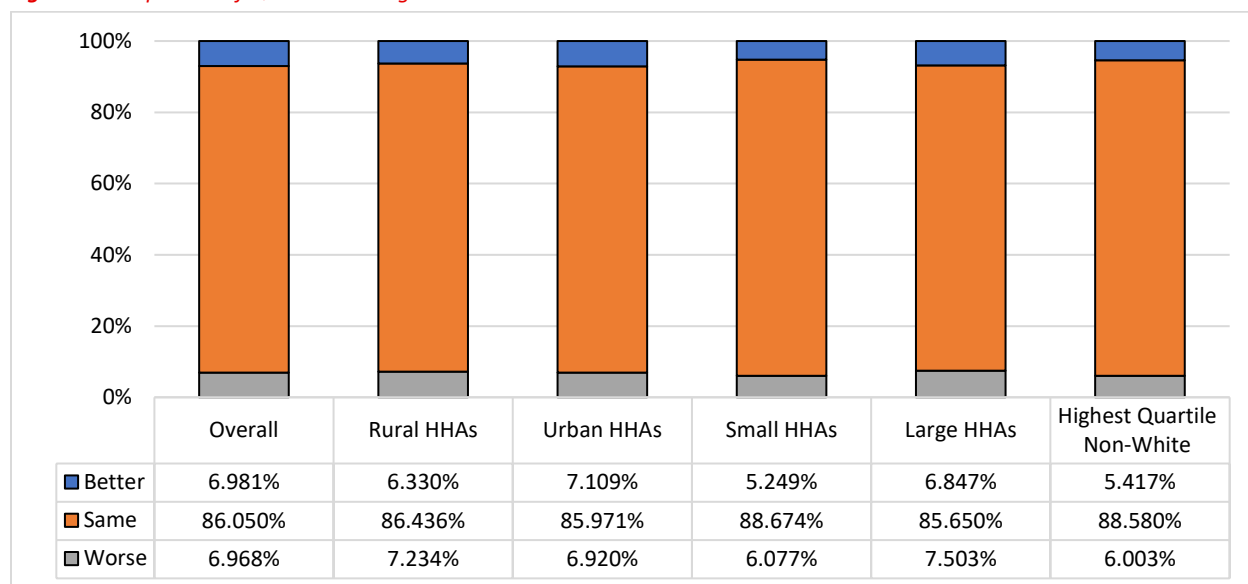
**Provide the approach and results of calibration and discrimination testing. Describe any over- or under-prediction of the model for important subgroups. Please attach results of calibration and discrimination testing. \***

[Attachment \(pdf, jpg, png\)](#)

We calibrated the most recent risk adjustment update by comparing changes in performance for home health agencies overall and by important subgroups (urbanicity/rurality, size, and share of quality episodes with non-white patients) to the prior risk adjustment specification. The results in **Figure 3** below indicate that most home health agencies overall and by subgroup perform equally well based on the updated risk adjustment model compared to the prior model, ranging between 86 percent among urban home health agencies and 88.6 percent among home health agencies with the highest percentage of non-white patients.



**Figure 3: Comparison of Quintile Ranking between the Current Model and the Prior Model**



## Equity

**Describe how this measure contributes to efforts to advance health equity (optional).** Provide a description of your methodology and approach to empirical testing of differences in performance scores across multiple socio-contextual variables (e.g., race, ethnicity, urbanicity/rurality, socio-economic status, gender, gender identity, sexual orientation, age). Provide an interpretation of the results, including interpretation of any identified differences and consideration of negative impact or unintended consequences on subgroups.

Across home health agencies, we compared *Improvement in Ambulation/Locomotion (#0167)* CY 2022 performance by subgroups for urbanicity/rurality, size, and share of quality episodes with non-white patients (see **Figure 4**).

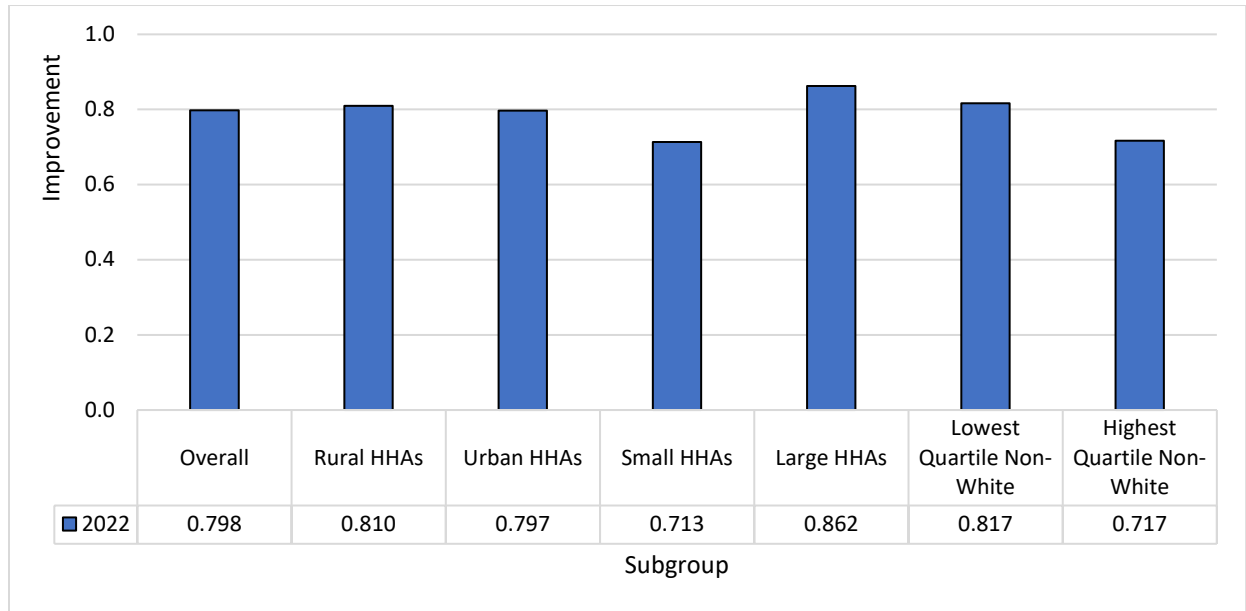
We define urbanicity as home health agencies located within a Core-Based Statistical Area (CBSA) as defined by the Office of Management and Budget (OMB). Urban home health agencies perform on average slightly worse at 0.797 than rural home health agencies at 0.810.

We define large home health agencies as home health agencies with quality episode counts in the top quartile for CY 2022 and small home health agencies as being in the bottom quartile. Large home health agencies perform much better at 0.862 than small home health agencies at 0.713.

For “Highest Quartile Non-White” home health agencies, we use the M0140: Race/Ethnicity OASIS item to identify the patient’s race/ethnicity as non-white. Home health agencies in the lowest quartile share of quality episodes with non-white patients perform worse at 0.717 than home health agencies in the highest quartile at 0.817.

The results, particularly for home health agency size and percentage of non-white patients, indicate a performance gap across home health agencies by subgroup. CMS is monitoring the persistence of these gaps and investigating next steps for addressing through reevaluated measure specifications or other policies (see <https://www.cms.gov/medicare/quality/home-health-quality-reporting-program/home-health-qrp-health-equity> for additional resources).

**Figure 4: Risk-adjusted Improvement in Ambulation/Locomotion (#0167) by Subgroup, CY 2022**



## Use & Usability

### Use

*[For initial endorsement]* **Check all current or planned uses \***

- Public Reporting
- Public Health/Disease Surveillance
- Payment Program
- Regulatory and Accreditation Programs
- Professional Certification or Recognition Program
- Quality Improvement with Benchmarking (external benchmarking to multiple organizations)
- Quality Improvement (Internal to the specific organization)
- Other

*Please specify (text box)*

**Not Applicable.**

*[For maintenance review]* **Check all current uses: \***

- Public Reporting
- Public Health/Disease Surveillance
- Payment Program
- Regulatory and Accreditation Programs
- Professional Certification or Recognition Program
- Quality Improvement with Benchmarking (external benchmarking to multiple organizations)
- Quality Improvement (Internal to the specific organization)
- Other

*(please specify (text box))*

- Not in use

*Please provide more information as to why the measure is not in use (text box)*

*[For maintenance review]* Please provide the following information describing the program(s) in which the measure is used: \*

Name of the program and sponsor *(text box)*  
URL *(text box)*  
Purpose *(text box)*  
Geographic area and percentage of accountable entities and patients included *(text box)*  
Level of analysis and care setting. *(text box)*

**You may add additional programs or sponsors**

Public Reporting

Care Compare [Find Healthcare Providers: Compare Care Near You | Medicare](#)

Quality Improvement (External to the specific organization)

Home Health Star Ratings [Home Health Star Ratings | CMS](#)

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## Usability

**What are the actions measured entities must take to improve performance on this measure? How difficult are those actions to achieve? \***

All home health agencies with at least 20 qualifying quality episodes of care receive quarterly measure reports on all their publicly reported measures. In addition, providers can run on-demand, confidential reports showing individual measure results and national averages, through CMS' iQIES system. There is an email box that home health agencies may submit questions to as well as a website on which the latest measure updates are posted. The OASIS Guidance Manual describes the OASIS-based reports that are available, report use(s), and provides guidance about OASIS and quality improvement. Home health agencies make use of these reports to monitor and improve the quality of care.

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*[For maintenance only]* **Summarize the feedback on measure performance and implementation from the measured entities and others. Describe how you obtained feedback. \***

Home health agencies receive quarterly measure reports on all their measures. There is an email box that home health agencies may submit questions to as well as a website on which the latest measure updates are posted. Because of the changes made to the OASIS in the OASIS-E version (effectively January 1, 2023), risk models for publicly reported outcome measures have been updated. CMS makes available information about risk models and covariates on its website.

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*[For maintenance only]* **Describe how you considered the feedback when developing or revising the measure specifications or implementation, including whether you modified the measure and why or why not. \***

No measure specifications changes requested or made.

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*[For maintenance only]* **Discuss any progress on improvement (trends in performance results, including performance across sub-populations if available, number and percentage of people receiving high-quality healthcare, geographic area, number and percentage of accountable entities and patients included). If use of the measure demonstrated no improvement, provide an explanation. \***

The measure is important to report publicly. Although improvements in performance are small, home health agencies continue to improve overall, and for each subgroup measured over time. Performance gaps still exist, and potential future performance metrics are likely to reflect the expansion of the HHVBP Model. Publicly reported measure results illustrate variation in performance across home health agencies that may inform patient and family choice of a home health agency.

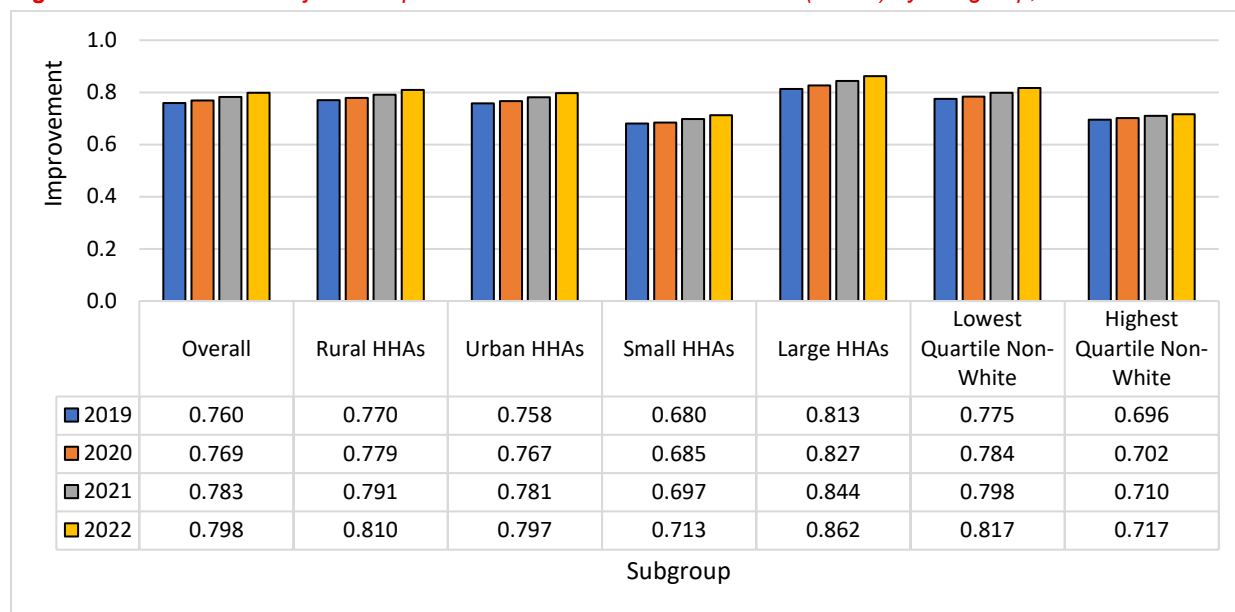
## Improvement

Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

**4b1. Refer to data provided in 1b 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, what are the reasons? 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.**

**Figure 5** presents trends in risk-adjusted *Improvement in Ambulation/Locomotion (#0167)* by subgroup. In addition to overall improvement from CY 2019 to CY 2022, each subgroup improves. We expect improvement to be driven in part by the implementation of the Quality of Patient Care (QoPC) Star Rating beginning in July 2015 and the Home Health Value Based Purchasing (HHVBP) Model in 2016. Results prior to 2019 showed dramatic improvement (not shown), while improvement in 2019-2022 was smaller. Nonetheless, QoPC Star Rating and HHVBP still provide incentives for home health agencies to improve on this measure. We anticipate continued improvement as HHVBP expands nationwide in 2023. Data will not reflect this policy change, as we only report results through CY2022.

**Figure 5: Trends in Risk-adjusted Improvement in Ambulation/Locomotion (#0167) by Subgroup, CY 2019 – CY 2022**



*[For maintenance only]* Explain any unexpected findings (positive or negative) during implementation of this measure, including unintended impacts on patients. \*

We do not find any unexpected findings during implementation of this measure at this time.

## Appendix A: IMPROVEMENT IN AMBULATION/LOCOMOTION (#0167)

Pseudo-R2 = 0.156; C-Statistics = 0.785; Number of Risk Factors = 135

Covariate Label	Coeff	SE	Odds Ratio	95% Lower	95% Upper	P Value
Age: 0-54	-0.146	0.015	0.864	0.839	0.890	0.000
Age: 55-59	-0.152	0.014	0.859	0.835	0.883	0.000
Age: 60-64	-0.147	0.012	0.863	0.844	0.884	0.000
Age: 70-74	0.003	0.009	1.003	0.985	1.020	0.761
Age: 75-79	-0.035	0.010	0.966	0.947	0.985	0.001
Age: 80-84	-0.120	0.011	0.887	0.867	0.907	0.000
Age: 85-89	-0.208	0.013	0.812	0.792	0.834	0.000
Age: 90-94	-0.349	0.015	0.705	0.684	0.727	0.000
Age: 95+	-0.553	0.018	0.575	0.555	0.596	0.000
Patient is male	0.054	0.005	1.056	1.045	1.067	0.000
Payment Source: Medicare HMO only	-0.094	0.028	0.910	0.862	0.961	0.001
Payment Source: Medicare and Medicaid	-0.339	0.049	0.713	0.647	0.785	0.000
Payment Source: Medicaid only	-0.149	0.025	0.861	0.821	0.904	0.000
Payment Source: Other Combination	-0.013	0.027	0.987	0.937	1.040	0.628
Start of Care from Community	-0.410	0.011	0.664	0.650	0.678	0.000
Resumption of Care	-0.402	0.012	0.669	0.653	0.684	0.000
Discharged from post-acute facility in past 14 days	-0.215	0.011	0.806	0.789	0.824	0.000
Risk for Hospitalization: History of falls in past 12 months	-0.057	0.011	0.944	0.924	0.965	0.000
Risk for Hospitalization: Multiple hospitalizations in past 6 months	-0.064	0.009	0.938	0.922	0.955	0.000
Risk for Hospitalization: Recent mental/emotional decline in past 3 months	0.095	0.010	1.100	1.078	1.122	0.000
Risk for Hospitalization: Difficulty complying with medical instruction in past 3 months	0.093	0.012	1.098	1.072	1.124	0.000
Risk for Hospitalization: Reports exhaustion	0.083	0.010	1.086	1.065	1.108	0.000
Risk for Hospitalization: None of the above	0.227	0.042	1.255	1.156	1.364	0.000

Covariate Label	Coeff	SE	Odds Ratio	95% Lower	95% Upper	P Value
Availability of Assistance: Regular nighttime	-0.051	0.018	0.951	0.918	0.984	0.004
Availability of Assistance: Regular daytime	-0.212	0.018	0.809	0.781	0.837	0.000
Availability of Assistance: Around the clock	-0.231	0.014	0.793	0.772	0.816	0.000
Living Arrangement: Lives alone	0.117	0.012	1.124	1.098	1.150	0.000
Living Arrangement: Lives in congregate setting (ALF)	-0.148	0.018	0.862	0.832	0.893	0.000
Pressure ulcer: Stage II or higher or unstageable present	-0.409	0.022	0.664	0.637	0.693	0.000
Stasis Ulcer: 1 observable stasis ulcer	-0.065	0.028	0.937	0.887	0.989	0.019
Stasis Ulcer: Multiple observable stasis ulcers	-0.263	0.026	0.769	0.730	0.809	0.000
Status of Surgical Wound: Epithelialized	0.327	0.015	1.387	1.347	1.429	0.000
Status of Surgical Wound: Fully granulating or early/partial granulation	0.318	0.022	1.374	1.317	1.433	0.000
Status of Surgical Wound: Not healing	0.480	0.016	1.616	1.567	1.666	0.000
Dyspnea: Walking more than 20 feet, climbing stairs	0.288	0.023	1.334	1.276	1.395	0.000
Dyspnea: Moderate exertion	0.248	0.024	1.282	1.223	1.344	0.000
Dyspnea: Minimal to no exertion	0.373	0.025	1.453	1.382	1.527	0.000
Urinary incontinence/catheter: Incontinent	-0.277	0.012	0.758	0.740	0.777	0.000
Urinary incontinence/catheter: Catheter	-0.569	0.018	0.566	0.547	0.586	0.000
Bowel Incontinence Frequency: Less than once a week	-0.174	0.018	0.840	0.812	0.870	0.000
Bowel Incontinence Frequency: One to three times a week	-0.332	0.015	0.718	0.697	0.739	0.000
Bowel Incontinence Frequency: Four to six times a week or more	-0.506	0.019	0.603	0.581	0.625	0.000
Bowel Incontinence Frequency: Ostomy for bowel elimination	-0.130	0.020	0.878	0.845	0.912	0.000
Cognitive Functioning: Requires prompting under stress	-0.118	0.013	0.889	0.867	0.911	0.000
Cognitive Functioning: Requires assist in special circumstances	-0.198	0.016	0.820	0.795	0.846	0.000
Cognitive Function: Requires considerable assist/totally dependent	-0.325	0.022	0.722	0.692	0.754	0.000
Confused: In new or complex situations	-0.119	0.011	0.887	0.868	0.907	0.000
Confused: Sometimes	-0.214	0.015	0.807	0.784	0.831	0.000
Confused: Constantly	-0.408	0.021	0.665	0.637	0.693	0.000

Covariate Label	Coeff	SE	Odds Ratio	95% Lower	95% Upper	P Value
Anxiety: Less often than daily	0.003	0.010	1.003	0.983	1.023	0.787
Anxiety: Daily, but not constantly	0.040	0.012	1.041	1.017	1.066	0.001
Anxiety: All of the time	0.153	0.021	1.166	1.118	1.215	0.000
PHQ2to9: Needs further eval	-0.126	0.015	0.882	0.857	0.907	0.000
PHQ2to9: No Depression Screening	-0.223	0.021	0.800	0.768	0.834	0.000
Behavioral: None	0.224	0.017	1.251	1.211	1.292	0.000
Behavioral: Impaired decision making	-0.043	0.013	0.958	0.934	0.983	0.001
Behavioral: Verbally disruptive, physical aggression, disruptive, or delusional	-0.232	0.018	0.793	0.766	0.821	0.000
Frequency of Disruptive Behavior: Once a month or less	0.205	0.020	1.227	1.179	1.278	0.000
Frequency of Disruptive Behavior: Several times a month	0.181	0.023	1.198	1.146	1.253	0.000
Frequency of Disruptive Behavior: Several times a week	0.184	0.020	1.202	1.155	1.250	0.000
Frequency of Disruptive Behavior: At least once daily	0.187	0.021	1.205	1.157	1.256	0.000
Ability to Dress Lower Body: Needs clothing/shoes laid out	0.248	0.029	1.282	1.211	1.356	0.000
Ability to Dress Lower Body: Assist needed putting on clothing	0.147	0.030	1.158	1.091	1.229	0.000
Ability to Dress Lower Body: Entirely dependent upon someone else	0.117	0.035	1.124	1.050	1.203	0.001
Bathing: With the use of devices in shower/tub	-0.310	0.036	0.733	0.683	0.787	0.000
Bathing: With intermittent assistance in shower/tub	-0.231	0.052	0.794	0.716	0.880	0.000
Bathing: Participates with supervision in shower/tub	-0.330	0.071	0.719	0.625	0.827	0.000
Bathing: Independent at sink, in chair, or on commode	-0.271	0.076	0.763	0.658	0.885	0.000
Bathing: Participates with assist at sink, in chair, or commode	-0.191	0.074	0.826	0.714	0.956	0.010
Bathing: Unable to participate; bathed totally by another	-0.519	0.074	0.595	0.515	0.688	0.000
Toilet Transferring: To/from/on/off toilet with human assist	0.240	0.028	1.271	1.204	1.341	0.000
Toilet Transferring: Able to self-transfer to bedside commode	0.158	0.033	1.171	1.097	1.250	0.000
Toilet Transferring: Unable to transfer to/from toilet or commode	0.265	0.035	1.304	1.217	1.397	0.000
Toilet Hygiene Assistance: Needs supplies laid out	0.004	0.030	1.004	0.947	1.064	0.905
Toilet Hygiene Assistance: Needs assistance	-0.207	0.041	0.813	0.750	0.882	0.000



Covariate Label	Coeff	SE	Odds Ratio	95% Lower	95% Upper	P Value
Toilet Hygiene Assistance: Entirely dependent	-0.412	0.045	0.662	0.607	0.723	0.000
Transferring: With minimal human assist or with device	-0.276	0.027	0.759	0.720	0.800	0.000
Transferring: Bears weight and pivots only	-0.085	0.033	0.919	0.861	0.980	0.010
Transferring: Unable or bedfast	-0.175	0.036	0.839	0.783	0.900	0.000
Ambulation/Locomotion: Two-handed device/human assist on steps	0.103	0.039	1.109	1.028	1.196	0.008
Ambulation/Locomotion: Walks only with supervision or assist	1.973	0.032	7.191	6.754	7.657	0.000
Ambulation/Locomotion: Chairfast or bedfast	1.448	0.036	4.254	3.961	4.568	0.000
Eating: Requires set up, intermittent assist or modified consistency	-0.036	0.014	0.965	0.938	0.992	0.011
Eating: Unable to feed self and must be assisted throughout meal	-0.106	0.021	0.900	0.863	0.937	0.000
Eating: Requires tube feedings, or no nutrients orally or via tube	-0.246	0.026	0.782	0.743	0.824	0.000
Management of Oral Meds: Advance dose prep/chart needed	0.145	0.031	1.156	1.088	1.229	0.000
Management of Oral Meds: Reminders needed	0.320	0.038	1.377	1.279	1.483	0.000
Management of Oral Meds: Unable	0.382	0.035	1.465	1.368	1.569	0.000
Supervision and Safety: Caregiver provides	-0.158	0.017	0.854	0.826	0.882	0.000
Supervision and Safety: Caregiver needs training	-0.029	0.019	0.971	0.935	1.009	0.136
Supervision and Safety: Caregiver uncertain	-0.194	0.028	0.824	0.780	0.870	0.000
HCC: Metastatic cancer and acute leukemia	-0.693	0.021	0.500	0.480	0.522	0.000
HCC: Lung and other severe cancers	-0.304	0.022	0.738	0.706	0.770	0.000
HCC: Lymphoma and other cancers	-0.225	0.024	0.799	0.763	0.836	0.000
HCC: Diabetes with chronic complications	-0.134	0.010	0.875	0.857	0.892	0.000
HCC: Protein-calorie malnutrition	-0.153	0.020	0.858	0.825	0.893	0.000
HCC: Morbid obesity	-0.261	0.023	0.770	0.736	0.806	0.000
HCC: End-stage liver disease	-0.284	0.038	0.753	0.698	0.812	0.000
HCC: Cirrhosis of liver	-0.207	0.029	0.813	0.768	0.861	0.000
HCC: Inflammatory bowel disease	0.228	0.039	1.256	1.163	1.356	0.000

Covariate Label	Coeff	SE	Odds Ratio	95% Lower	95% Upper	P Value
HCC: Bone/joint/muscle infections/necrosis	-0.115	0.021	0.892	0.856	0.929	0.000
HCC: Severe hematological disorders	-0.195	0.043	0.823	0.757	0.895	0.000
HCC: Dementia with complications	-0.333	0.019	0.717	0.691	0.743	0.000
HCC: Dementia without complication	-0.214	0.014	0.807	0.786	0.830	0.000
HCC: Quadriplegia	-1.079	0.040	0.340	0.314	0.367	0.000
HCC: Paraplegia	-1.252	0.032	0.286	0.268	0.305	0.000
HCC: Spinal cord disorders/injuries	-0.607	0.030	0.545	0.514	0.578	0.000
HCC: Amyotrophic lateral sclerosis and other motor neuron disease	-1.616	0.047	0.199	0.181	0.218	0.000
HCC: Cerebral palsy	-0.912	0.034	0.402	0.376	0.429	0.000
HCC: Myasthenia gravis/myoneural disorders and Guillain-Barre syndrome/inflammatory and toxic neuropathy	-0.200	0.028	0.819	0.775	0.865	0.000
HCC: Muscular dystrophy	-1.114	0.061	0.328	0.291	0.370	0.000
HCC: Multiple sclerosis	-0.709	0.024	0.492	0.470	0.515	0.000
HCC: Parkinson's and Huntington's diseases	-0.436	0.013	0.646	0.630	0.664	0.000
HCC: Seizure disorders and convulsions	-0.153	0.015	0.858	0.834	0.883	0.000
HCC: Coma, brain compression/anoxic damage	-0.284	0.067	0.752	0.660	0.858	0.000
HCC: Congestive heart failure	-0.176	0.010	0.839	0.822	0.855	0.000
HCC: Ischemic or unspecified stroke	-0.405	0.054	0.667	0.599	0.742	0.000
HCC: Hemiplegia/hemiparesis	-0.430	0.013	0.650	0.634	0.667	0.000
HCC: Monoplegia, other paralytic syndromes	-0.199	0.038	0.820	0.761	0.883	0.000
HCC: Atherosclerosis of the extremities with ulceration or gangrene	-0.609	0.037	0.544	0.506	0.585	0.000
HCC: Vascular disease	-0.114	0.012	0.892	0.871	0.914	0.000
HCC: Chronic obstructive pulmonary disease	-0.155	0.009	0.856	0.841	0.872	0.000
HCC: Fibrosis of lung and other chronic lung disorders	-0.118	0.028	0.889	0.841	0.940	0.000
HCC: Aspiration and specified bacterial pneumonias	-0.154	0.028	0.857	0.812	0.905	0.000
HCC: Dialysis status	-0.726	0.040	0.484	0.447	0.523	0.000

Covariate Label	Coeff	SE	Odds Ratio	95% Lower	95% Upper	P Value
HCC: Chronic kidney disease, stage 5	-0.504	0.016	0.604	0.586	0.623	0.000
HCC: Chronic kidney disease, severe (stage 4)	-0.081	0.017	0.923	0.892	0.954	0.000
HCC: Pressure ulcer of skin with necrosis through to muscle, tendon, or bone	-0.608	0.041	0.545	0.502	0.591	0.000
HCC: Pressure ulcer of skin with full thickness skin loss	-0.262	0.028	0.769	0.729	0.812	0.000
HCC: Pressure ulcer of skin with partial thickness skin loss	-0.140	0.025	0.869	0.828	0.913	0.000
HCC: Chronic ulcer of skin, except pressure	-0.310	0.018	0.734	0.709	0.760	0.000
HCC: Hip fracture/dislocation	-0.244	0.060	0.784	0.697	0.882	0.000
HCC: Traumatic amputations and complications	-0.683	0.152	0.505	0.375	0.681	0.000
HCC: Major organ transplant or replacement status	0.304	0.075	1.356	1.170	1.571	0.000
HCC: Amputation status, lower limb/amputation complications	-1.018	0.025	0.361	0.344	0.379	0.000
Constant	0.928	0.082	2.530	2.153	2.972	0.000