



# **Home Health Quality Reporting Program Measure Calculations and Reporting User's Manual**

## ***Version 2.0***

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## CONTENTS

|  |           |
|--|-----------|
| <b>Chapter 1. Manual Organization and Measures.....</b>  | <b>1</b>  |
| <b>Chapter 2. Medicare Claims-Based Measures .....</b>   | <b>6</b>  |
| <b>Chapter 3. Quality Episodes for Assessment-Based (OASIS) Quality Measures .....</b>                       | <b>9</b>  |
| <b>Chapter 4. Data Selection for Internet Quality Improvement and Evaluation System (iQIES) Reports.....</b> | <b>12</b> |
| Section 1: iQIES Review and Correct Reports.....   | 13        |
| Section 2: iQIES Quality Measure (QM) Reports.....   | 14        |
| Section 3: Provider Preview Reports .....  | 16        |
| <b>Chapter 5. Calculations for Assessment-Based (OASIS) Measures That Are Not Risk-Adjusted .....</b>        | <b>17</b> |
| Section 1: Introduction.....   | 17        |
| Section 2: Steps Used in National Quality Measure Calculations .....   | 17        |
| <b>Chapter 6. Calculations for Assessment-Based (OASIS) Measures That Are Risk-Adjusted.....</b>             | <b>19</b> |
| Section 1: Introduction.....   | 19        |
| Section 2: Calculating Risk Adjusted Quality Measures.....   | 20        |
| Section 3: Identifying Risk Factors .....  | 21        |
| <b>Chapter 7. Measure Specifications for Assessment- Based (OASIS) Quality Measures .....</b>                | <b>23</b> |
| <b>Appendix A: Model Parameters .....</b>  | <b>42</b> |

## LIST OF TABLES

|             |  |    |
|-------------|--|----|
| Table 1-1.  | Home Health Assessment-Based (OASIS) Quality Measures Reference: HH QRP .....  | 2  |
| Table 1-2.  | Home Health Assessment-Based (OASIS) Quality Measures Reference: Removed from HH QRP .....   | 3  |
| Table 1-3.  | Home Health Claims-based Quality Measures Reference: HH QRP .....  | 5  |
| Table 4-1.  | Timeline for iQIES Review and Correct Reports for Assessment-Based (OASIS) Quality Measures and Care Compare Refreshes (Example Dates).....                                    | 14 |
| Table 4-2.  | Data Included in the iQIES QM Reports for OASIS Quality Measures.....  | 15 |
| Table 7-1.  | Timely Initiation of Care NQF# 0526* (CMS ID 0196-10).....   | 25 |
| Table 7-2.  | Influenza Immunization Received for Current Flu Season NQF # 0522 (CMS ID 0212-10).....  | 26 |
| Table 7-3.  | Drug Regimen Review Conducted with Follow-Up for Identified Issues (CMS ID 2946-10).....   | 27 |
| Table 7-4.  | Application of Percent of Long-Term Care Hospital Patients with an Admission and Discharge Functional Assessment and a Care Plan that Addresses Function (CMS ID 5853-10)..... | 28 |
| Table 7-5.  | Drug Education on All Medications Provided to Patient/Caregiver (CMS ID 2705-10) .....   | 31 |
| Table 7-6.  | Transfer of Health Information to the Patient (CMS ID=3496-10).....  | 32 |
| Table 7-7.  | Transfer of Health Information to the Provider (CMS ID=5652-10) .....  | 33 |
| Table 7-8.  | Improvement in Ambulation – Locomotion NQF #0167 (CMS ID 0183-11).....   | 34 |
| Table 7-9.  | Improvement in Bed Transferring NQF #0175 (CMS ID 1000-11).....  | 35 |
| Table 7-10. | Improvement in Bathing NQF# 0174 (CMS ID 0185-11).....   | 36 |
| Table 7-11. | Improvement in Management of Oral Medications NQF # 0176 (CMS ID 0189-11) .....  | 37 |
| Table 7-12. | Improvement in Dyspnea NQF #0179* (CMS ID 0187-11) .....   | 38 |
| Table 7-13. | Application of Percent of Residents Experiencing One or More Falls with Major Injury NQF # 0674 (CMS ID 3493-10).....  | 39 |
| Table 7-14. | Changes in Skin Integrity Post-Acute Care: Pressure Ulcer/Injury (CMS ID 5852-11) .....  | 40 |
| Table A-1.  | Description of Risk Factors .....  | 42 |
| Table A-2.  | Summary of Number of Risk Factors and Model Fit Statistics .....   | 53 |
| Table A-3.  | Estimated Coefficients.....  | 54 |

## Chapter 1. Manual Organization and Measures

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The purpose of this manual is to present the methods used to calculate quality measures that are included in the Centers for Medicare & Medicaid Services' (CMS) Home Health (HH) Quality Reporting Program (QRP), including all measures finalized for the Calendar Year 2023 HH QRP.<sup>1</sup> Quality measures are tools that help measure or quantify healthcare processes, outcomes, patient or resident perceptions and organizational structure/systems that are associated with the ability to provide high-quality services related to one or more quality goals.<sup>2</sup> This manual provides detailed information for each quality measure, including quality measure definitions, inclusion and exclusion criteria and measure calculation specifications. An overview of the HH QRP and additional information pertaining to public reporting is publicly available and can be accessed through the [HH QRP website](https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/index.html).<sup>3</sup> Outlined below is the organization of this manual and an overview of the information found in each section.

This manual is organized by chapter, and each chapter contains sections that provide additional details. **Chapter 1** presents the purpose of the manual, explaining how the manual is organized. The remaining chapters are organized by quality measure and provide detailed information about measure specifications and reporting components. **Chapter 2** identifies the claims-based measures. **Chapter 3** presents the selection logic used to construct home health quality episodes records for the assessment-based quality measures that rely on the Outcome and Assessment Information Set (OASIS). **Chapter 4** describes the three types of Internet Quality Improvement and Evaluation System (iQIES) data reports for the OASIS-based quality measures: iQIES Review and Correct reports, iQIES Quality Measure (QM) reports and preview reports for Home Health Compare. iQIES QM Reports are separated into two, one containing measure information at the agency-level and another at the patient-level. Following the discussion of quality measure specifications for each report, information is presented in table format to illustrate the report calculation month, reporting quarters and the months of data that are included in each monthly report. **Chapter 5** describes the methods used to calculate the OASIS-based measures that are not risk-adjusted, and **Chapter 6** describes the methods used to calculate the risk-adjusted OASIS-based measures. **Chapter 7** provides the measure logical specifications for each of the quality measures calculated from the OASIS in table format. Table 1-1, below, lists the HH QRP measures calculated using patient assessment data that are included in the manual. **Appendix A** includes covariate values and means used to calculate the OASIS-based risk-adjusted measures.

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<sup>1</sup> This manual is specific to the HH QRP. The technical specifications and measure descriptions (tables) for all HH QM measures are available on <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Home-Health-Quality-Measures.html>

<sup>2</sup> Centers for Medicare & Medicaid Services. (April 2022). Quality Measures. Accessed on November 22, 2022. Available at: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityMeasures/index.html>

<sup>3</sup> The HH QRP website can be found at the following link: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/index.html>

**Table 1-1. Home Health Assessment-Based (OASIS) Quality Measures Reference: HH QRP**

| Measure Reference Name  | CMS ID  | NQF <sup>4</sup> # | Quality Measure Description   |
|---|---------|--------------------|---|
| Timely Initiation of Care   | 0196-10 | 0526*              | How often the home health team began their patients' care in a timely manner.   |
| Influenza Immunization Received for Current Flu Season  | 0212-10 | 0522               | How often the home health team made sure that their patients have received a flu shot for the current flu season.                           |
| Drug Education  | 2705-10 | NA                 | How often the home health team taught patients (or their family caregivers) about their drugs.  |
| Drug Regimen Review Conducted With Follow-Up for Identified Issues- Post Acute Care (PAC) HH QRP  | 2946-10 | NA                 | How often physician-recommended actions to address medication issues were completed timely  |
| Application of Percent of Long-Term Care Hospital (LTCH) Patients with an Admission and Discharge Functional Assessment and a Care Plan That Addresses Function | 5853-10 | 2631               | How often a patient's functional abilities were assessed at admission and discharge and functional goals were included in their care plan.  |
| Transfer of Health Information to the Patient   | 3496-10 | NA                 | How often transfer of health information to the patient occurs after their discharge from home health to a home or community-based setting. |
| Transfer of Health Information to the Provider  | 5652-10 | NA                 | How often transfer of health information to the provider occurs after their discharge from home health to an eligible clinical setting      |
| Improvement in Ambulation- Locomotion   | 0183-11 | 0167               | How often patients got better at walking or moving around.  |
| Improvement in Bed Transferring   | 1000-11 | 0175               | How often patients got better at getting in and out of bed.   |
| Improvement in Bathing  | 0185-11 | 0174               | How often patients got better at bathing.   |
| Improvement in Management of Oral Medications   | 0189-11 | 0176               | How often patients got better at taking their drugs correctly by mouth.   |
| Improvement in Dyspnea  | 0187-11 | 0179*              | How often patients' breathing improved.   |
| Application of Percent of Residents Experiencing One or More Falls with Major Injury  | 3493-10 | 0674               | How often patients experienced one or more falls with major injury  |
| Changes in Skin Integrity Post Acute Care: Pressure Ulcer/Injury  | 5852-11 | NA                 | How often patients have pressure ulcers/pressure injuries that are new or worsened.   |

\* - The following measure was previously approved or given time limited endorsement by the National Quality Forum (NQF) but has been withdrawn from NQF submission

<sup>4</sup> NQF: National Quality Forum

**Table 1-2. Home Health Assessment-Based (OASIS) Quality Measures Reference: Removed from HH QRP**

| Quality Measure  | CMS ID  | Measure Reference Name   | Removal Date from Review & Correct | Removal Date from Preview Report | Removal Date from HHC |
|--|---------|--|------------------------------------|----------------------------------|-----------------------|
| Drug Education on All Medications Provided to Patient/Caregiver                              | 2705-10 | How often the home health team taught patients (or their family caregivers) about their drugs  | 1/1/2024                           | July 2023                        | October 2023          |
| Depression Assessment Conducted  | 0198-10 | How often the home health team checked patients for depression.  | 5/15/20                            | October 2020                     | July 2021             |
| Multifactor Fall Risk Assessment Conducted for All Patients who Can Ambulate NQF             | 0952-10 | How often the home health team checked patients' risk of falling.  | 5/15/20                            | October 2020                     | July 2021             |
| Diabetic Foot Care and Patient / Caregiver Education Implemented during All Episodes of Care | 0958-10 | For patients with diabetes, how often the home health team got doctor's orders, gave foot care, and taught patients about foot care. | 5/15/20                            | October 2020                     | July 2021             |
| Pneumococcal Vaccine Ever Received   | 0214-10 | How often the home health team made sure that their patients have received a pneumococcal vaccine (pneumonia shot).                  | 5/15/20                            | October 2020                     | July 2021             |
| Improvement in Status of Surgical Wounds   | 0193-10 | How often patients' wounds improved or healed after an operation.  | 5/15/20                            | October 2020                     | July 2021             |
| New or Worsened Pressure Ulcers  | 4803-10 | Percent of Residents or Patients with Pressure Ulcers That Are New or Worsened.  | 1/1/20                             | July 2020                        | October 2020          |

| Quality Measure                               | CMS ID  | Measure Reference Name                               | Removal Date from Review & Correct | Removal Date from Preview Report | Removal Date from HHC |
|---|---------|--|------------------------------------|----------------------------------|-----------------------|
| Improvement in Pain Interfering with Activity | 0191-10 | How often patients had less pain when moving around. | N/A                                | January 2020                     | April 2020            |



**Table 1-3. Home Health Claims-based Quality Measures Reference: HH QRP**

| Measure Reference Name   | CMS ID   | NQF <sup>5</sup> # | Quality Measure Description  |
|--|----------|--------------------|--|
| Acute Care Hospitalization During the First 60 Days of Home Health                       | 0180-10  | 0171               | Percentage of home health stays in which patients were admitted to an acute care hospital during the 60 days following the start of the home health stay.  |
| Emergency Department Use Without Hospitalization During the First 60 days of Home Health | 0182-10  | 0173               | Percentage of home health stays in which patients used the emergency department but were not admitted to the hospital during the 60 days following the start of the home health stay.  |
| Discharge to Community   | 02944-10 | 3477               | Percentage of home health stays in which patients were discharged to the community and do not have an unplanned admission to an acute care hospital or LTCH in the 31 days following discharge to community, and remain alive in the 31 days following discharge to community.   |
| Medicare Spending Per Beneficiary - Post-Acute Care Home Health Measure                  | 2943-10  | NA                 | The assessment of the Medicare spending of a home health agency's MSPB-PAC HH episodes, relative to the Medicare spending of the national median home health agency's MSPB-PAC HH episodes across the same performance period.   |
| Potentially Preventable 30-Day Post-Discharge Readmission Measure                        | 2945-10  | NA                 | Percentage of home health stays in which patients who had an acute inpatient discharge within the 30 days before the start of their home health stay and were admitted to an acute care hospital or LTCH for unplanned, potentially preventable readmissions in the 30-day window beginning two days after home health discharge.                      |
| Home Health Within-Stay Potentially Preventable Hospitalization                          | 2946-10  | NA                 | Home health agency (HHA)-level rate of risk-adjusted potentially preventable hospitalization (PPH) or potentially preventable observation stays (PPOBS) that occur within a home health (HH) stay for all eligible stays at each agency. A HH stay is a sequence of HH payment episodes separated from other HH payment episodes by at least two days. |

<sup>5</sup> NQF: National Quality Forum

## Chapter 2. Medicare Claims-Based Measures

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CMS utilizes a range of data sources to calculate quality measures. The quality measures listed below were developed using Medicare claims data submitted for Medicare fee-for-service (FFS) patients. Each measure is calculated using unique specifications and methodologies specific to the quality measure using data available from FFS claims. Information regarding measure specifications and reporting details is publicly available and can be accessed on the [HH Quality Reporting Measures Information website](#). Below are the Medicare claims-based measures included in the HH QRP and hyperlinks that provide information about each measure, including measure descriptions and definitions, specifications (e.g. numerator, denominator, exclusions, and calculations) and risk-adjustment:

### ***Potentially Preventable 30-Day Post-Discharge Readmission Measure for Home Health Quality Reporting Program (CMS ID: 2945-10)***

The potentially preventable readmission (PPR) measure for the post-acute care (PAC) HH QRP estimates the risk-standardized rate of unplanned, potentially preventable readmissions for patients (Medicare FFS beneficiaries) who receive services **from** a home health agency (HHA). This outcome measure reflects readmission rates for patients who are readmitted to a short-stay acute-care hospital or an LTCH with a principal diagnosis considered to be unplanned and *potentially preventable*.

This measure assesses PPR within a 30-day window following discharge from PAC HHA and was developed to meet the *resource use and other measures* domain as mandated by the IMPACT Act.

The measure calculates a risk-adjusted PPR rate for a HHA. This is derived by first calculating a standardized risk ratio -- the predicted number of readmissions at the PAC provider (HHA) divided by the expected number of readmissions for the same **patients** if treated at the average PAC provider. The standardized risk ratio is then multiplied by the mean readmission rate in the population (i.e., all Medicare FFS patients included in the measure) to generate the PAC provider-level standardized readmission rate of potentially preventable readmissions. For this PPR measure, readmissions that are usually for planned procedures are not counted as being potentially preventable.

Specifications for this measure can be found on the CMS website:

[https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Downloads/MeasureSpecificationsForCY17-HH-QRP-FR\\_updated\\_8\\_2018.pdf](https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Downloads/MeasureSpecificationsForCY17-HH-QRP-FR_updated_8_2018.pdf)

### ***Discharge to Community -Post Acute Care (PAC) Home Health Quality Reporting Program (CMS ID:2944-10)***

This claims-based outcome measure assesses successful discharge to the community from a PAC setting, with successful discharge to the community including no unplanned re-hospitalizations and no death in the 31 days following discharge. Specifically, this measure reports a HHA's risk-standardized rate of Medicare FFS patients who are discharged to the community following a HH stay, and do not have an unplanned readmission to an acute care hospital or LTCH in the 31 days following discharge to community, and who remain alive during the 31 days following discharge to community. Community, for this measure, is defined as home or self-care based on Patient Discharge Status Codes [01, 06, 81, 86] on the Medicare FFS claim.<sup>6 7</sup>

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<sup>6</sup> National Uniform Billing Committee Official UB-04 Data Specifications Manual 2017, Version 11, July 2016, Copyright 2016, American Hospital Association.

<sup>7</sup> This measure only captures discharges to home and community based settings, not to institutional settings, and is consistent with both Medicaid regulations requiring home and community based settings to support integration, and also with the Americans with Disabilities Act (ADA). This definition is not intended to suggest

This measure was developed to address the *resource use and other measures* domain as mandated by the IMPACT Act.

Specifications for this measure can be found on the CMS website:

[https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Downloads/MeasureSpecificationsForCY17-HH-QRP-FR\\_updated\\_8\\_2018.pdf](https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Downloads/MeasureSpecificationsForCY17-HH-QRP-FR_updated_8_2018.pdf)

**Medicare Spending Per Beneficiary (MSPB) - Post-Acute Care (PAC) Home Health Quality Reporting Program (CMS ID: 2943-10)**

The MSPB-PAC HHA measure evaluates HH resource use relative to the resource use of the national median of all HH providers. Specifically, the measure assesses the Medicare spending performed by the HH provider and other healthcare providers during an MSPB-PAC episode.

The measure is calculated as the ratio of the payment-standardized, risk-adjusted MSPB-PAC HHA Amount for each PAC HH provider divided by the episode-weighted median MSPB-PAC HHA Amount across all PAC HH providers. Specifications for this measure can be found on the CMS website:

[https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Post-Acute-Care-Quality-Initiatives/Downloads/2016\\_04\\_06\\_mspb\\_pac\\_measure\\_specifications\\_for\\_rulemaking.pdf](https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Post-Acute-Care-Quality-Initiatives/Downloads/2016_04_06_mspb_pac_measure_specifications_for_rulemaking.pdf)

**Acute Care Hospitalization (CMS ID: 0180-10, NQF #0171)**

This claims-based outcome measure assesses the percentage of home health stays in which patients were admitted to an acute care hospital during the 60 days following the start of the home health stay.

Acute care hospitalization occurs if the patient has at least one Medicare inpatient claim from short term or critical access hospitals (identified by CMS Certification Number ending in 0001-0879, 0800-0899, or 1300-1399) during the **60-day** window. Specifications for this measure can be found on the CMS website:

<https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Downloads/Claims-Based-ACH-and-ED-Use-Measures-Technical-Documentation-and-Risk-Adjustment.zip>

**Emergency Department Use without Hospitalization (CMS ID: 0182-10, NQF #0173)**

This claims-based outcome measure assesses the number of home health stays for patients who have a Medicare claim for outpatient emergency department use and no claims for acute care hospitalization in the 60 days following the start of the home health stay.

Emergency department use without hospitalization occurs when the patient has any Medicare outpatient claims with any ER revenue center codes (0450-0459, 0981) during the 60-day window AND if the patient has no Medicare inpatient claims for admission to an acute care hospital (identified by the CMS Certification Number on the in-patient claim ending in 0001-0879, 0800-0899, or 1300-1399) during the 60-day window. Specifications for this measure can be found on the CMS website:

<https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Downloads/Claims-Based-ACH-and-ED-Use-Measures-Technical-Documentation-and-Risk-Adjustment.zip>

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that board and care homes, assisted living facilities, or other settings included in the definition of “community” for the purpose of this measure are the most integrated setting for any particular individual or group of individuals under the ADA and Section 504.

***Home Health Within-Stay Potentially Preventable Hospitalization (CMS ID: 2496-10)***

This measure reports a home health agency (HHA)-level rate of risk-adjusted potentially preventable hospitalization (PPH) or potentially preventable observation stays (PPOBS) that occur within a home health (HH) stay for all eligible stays at each agency. A HH stay is a sequence of HH payment episodes separated from other HH payment episodes by at least two days.

This measure calculates a risk-adjusted PPH rate for each HHA. This is derived by first calculating a standardized risk ratio – the predicted number of unplanned, potentially preventable hospital admissions or observation stays at the HHA divided by the expected number of admissions or observation stays for the same patients if treated at the average HHA. The standardized risk ratio is then multiplied by the mean potentially preventable admission or observation stay rate in the population (i.e., all Medicare fee-for-service (FFS) patients included in the measure) to generate the HHA-level standardized hospitalization rate of potentially preventable hospitalization. Specifications for this measure can be found on the CMS website: [https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Downloads/HH\\_QRP\\_Specifications\\_Potentially\\_Preventable\\_Hospitalizations.pdf](https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Downloads/HH_QRP_Specifications_Potentially_Preventable_Hospitalizations.pdf)

## Chapter 3. Quality Episodes for Assessment-Based (OASIS) Quality Measures

A quality episode is the unit of analysis for OASIS-based measures.<sup>8</sup> This section provides the steps to construct a home health quality episode from OASIS assessments. OASIS data are not **required** for patients under the age of 18, pre- or post-partum patients, and those patients who do not require skilled care. These categories of patients, therefore, are excluded from quality measure calculation.

The following fields are needed from each assessment to construct home health quality episodes:

- M0100\_ASSMT\_REASON: Reason for assessment
- PRVDR\_ID: Facility internal ID<sup>9</sup>
- STATE\_CD: State abbreviation
- EFCTV\_DT: Effective date of the assessment<sup>10</sup>
- iQIES\_PTNT\_ID: Unique patient ID<sup>11</sup>
- ASSESSMENT\_ID: Unique OASIS assessment ID<sup>12</sup>
- **ASSESSMENT\_DT: Assessment completion date<sup>13</sup>**

OASIS assessments are transmitted to the National Submissions Database residing on a secure database server maintained by CMS. Quality episodes are constructed by matching up assessments for each individual served by a home health agency, sorting those assessments by effective date, then pairing up assessments that mark the beginning and end of a quality episode. During this process, a unique patient ID (iQIES\_PTNT\_ID) and ASSESSMENT\_ID are assigned to each assessment. Quality episodes for which either the

### QUALITY EPISODES

Quality episodes are used in the calculation of the assessment-based quality measures. Quality episodes are not the same as certification periods or Patient-Driven Groupings Model (PDGM) payment periods.

A quality episode begins with either a Start of Care or Resumption of Care assessment and ends with a Transfer, Death at home, or Discharge assessment.

A quality episode does not include Recertification (follow-up) or Other Follow-up assessments and may be longer or shorter than the payment periods.

A quality episode is measured from:

- Start of Care to Transfer OR
- Start of Care to Death at Home OR
- Start of Care to the Discharge OR
- Resumption of Care to Transfer OR
- Resumption of Care to Death at Home OR
- Resumption of Care to Discharge

<sup>8</sup> Note that quality episodes are defined differently than payment episodes/periods.

<sup>9</sup> PRVDR\_ID was formerly FAC\_INT\_ID in QIES prior to 2020.

<sup>10</sup> Effective date depends on the reason for assessment:

- If M0100\_ASSMT\_REASON = 01, effective date = M0030\_START\_CARE\_DT.
- If M0100\_ASSMT\_REASON = 03, effective date = M0032\_ROC\_DATE.
- If M0100\_ASSMT\_REASON = 06, 07, 08, or 09, effective date = M0906\_DC\_TRAN\_DTH\_DT.

<sup>11</sup> iQIES\_PTNT\_ID is assigned to each assessment during processing; the provider does not submit this information. iQIES\_PTNT\_ID was formerly RES\_INT\_ID in QIES prior to 2020.

<sup>12</sup> ASSESSMENT\_ID is assigned to each assessment during processing; the provider does not submit this information.

<sup>13</sup> The assessment completion date is constructed using M0090\_ASMT\_CMPLT\_DT and is used to determine which risk adjustment model will be used. For example, start of care/resumption of care assessments completed

beginning or end assessment is missing, or for which assessments are out of sequence, are not included. Quality episodes<sup>14</sup> are not created for patients who meet the following OASIS data collection exclusions, and generic exclusions for OASIS-based measures: patients who 1) do not have as a payment source Medicare (traditional fee-for-service, Medicare (HMO/managed care/Advantage plan), Medicaid (traditional fee-for-service), or Medicaid (HMO/managed care); 2) are less than 18 years old at start or resumption of care; 3) are receiving pre- and/or post-partum maternity services; or 4) are receiving personal care only.

When working with assessment records from the National Submissions Database, the unique home health agency ID is a combination of the two position STATE\_CD and PRVDR\_ID, and the unique patient ID is a combination of STATE\_CD and iQIES\_PTNT\_ID.

The process of building quality episode-level records is as follows:

1. Keep only assessments related to start of care (SOC), resumption of care (ROC) after an inpatient facility stay, or end of care (EOC) discharge from home health care, including discharge due to death, or admission to inpatient facility for 24 hours or more (with or without discharge from home health care)<sup>15</sup>:
  - a. SOC: M0100\_ASSMT\_REASON = 01
  - b. ROC: M0100\_ASSMT\_REASON = 03
  - c. EOC: M0100\_ASSMT\_REASON = 06, 07, 08, or 09
2. Sort assessments by PRVDR\_ID, iQIES\_PTNT\_ID, STATE\_CD in descending order based on EFCTV\_DT (i.e., latest to earliest assessment).
3. For each set of assessments having the same combination of PRVDR\_ID, iQIES\_PTNT\_ID, STATE\_CD, step through the assessments to find the latest assessment with M0100\_ASSMT\_REASON = 06, 07, 08, or 09.<sup>16</sup>
4. If an assessment with M0100\_ASSMT\_REASON = 06, 07, 08, or 09 is found before an assessment with M0100\_ASSMT\_REASON = 01 or 03 is found, discard the episode being built and start over with step #3.
5. If no assessment with M0100\_ASSMT\_REASON = 01 or 03 is found before the assessments for this patient are exhausted, discard the episode being built.
6. When an assessment with M0100\_ASSMT\_REASON = 01 or 03 is found, the episode is complete.
7. Create an episode of care record with the following attributes:
  - PRVDR\_ID
  - iQIES\_PTNT\_ID

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on or after January 1, 2023 will use the most recent risk adjustment model regardless of the assessment's effective date.

<sup>14</sup> Note that quality episodes are defined differently than payment episodes/periods.

<sup>15</sup> For more information on how assessments are defined, please refer to the OASIS D User Manual available at: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Downloads/draft-OASIS-D-Guidance-Manual-7-2-2018.pdf>

<sup>16</sup> In the rare case of a patient having two EOC assessments with the same effective date, the one with the lower M0100 value is used to try to match to an earlier SOC/ROC assessment. Thus, in effect, in Step 2, there is an additional descending sort on M0100.

- STATE\_CD
- ASSESSMENT\_ID\_1: Assessment ID of the SOC or ROC assessment
- ASSESSMENT\_ID\_2: Assessment ID of the EOC assessment
- EFCTV\_DT\_1: Effective date of the SOC or ROC assessment
- EFCTV\_DT\_2: Effective date of the EOC assessment



## Chapter 4. Data Selection for Internet Quality Improvement and Evaluation System (iQIES) Reports

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The purpose of this chapter is to present the data selection criteria for the **iQIES Review and Correct Reports** and the **iQIES Quality Measure (QM) Reports** for quality measures that are included in the HH QRP and are calculated using OASIS data. It also describes the **preview reports** available via iQIES.

- The **iQIES Review and Correct Reports** are on-demand reports that contain agency-level and patient-level measure information. They are updated on a quarterly basis with data refreshed weekly as data are submitted and/or corrected by the agency. These reports allow providers to obtain performance data for the past 12 months (four rolling quarters) and are restricted to only the publicly reported assessment-based measures. The intent of this report is for providers to access reports prior to the quarterly data submission deadline to ensure accuracy of their data. This also allows providers to track quarterly data that includes data from quarters after the submission deadline (“frozen” data). **Section 1** below contains the data selection for the assessment-based (OASIS) quality measures for these reports.
- The **iQIES QM Reports** for HH QRP measures<sup>17</sup> are on-demand reports that provide up to 12 rolling months of measure results and are separated into two reports: Outcome and Process. Each has two versions: one containing measure information at the agency-level and another at the patient-level (a.k.a., “tally” reports). These reports provide data on multiple reporting periods/rates to allow for comparisons of measure performance. The agency-level Process Measures reports have three comparison rates: current, prior, and national observed rate. . The agency-level Outcome reports have four comparison rates: current, adjusted prior, Care Compare risk adjusted rate (if applicable), and the national observed rate. The intent of these reports is to enable tracking of quality measure data regardless of quarterly submission deadline (“freeze”) dates.
  - The assessment-based (OASIS) measures data are updated twice month, at the agency- and patient-level, as data becomes available.. The performance data contains a rolling 12-months of data, updated based on the schedule presented in Table 4-2.
  - The claims-based measures data are updated annually at the agency-level only, with the exception of the Acute Care Hospitalization and Emergency Department Use Without Hospitalization measures. These are updated quarterly for confidential feedback reporting, and annually for public reporting.

**Section 2** of this chapter presents data selection information that can be applied to both the iQIES agency-level QM Reports and the iQIES patient-level QM Reports.

- Providers can also access two types of **Care Compare Preview Reports** on iQIES:
  - The **Care Compare Preview Report** previews values for all measures that will be displayed on Care Compare in the coming refresh.

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<sup>17</sup> There are additional reports available in iQIES for measures that are not part of the HH QRP. These include the Agency Patient-related Characteristics (case mix) report and Potentially-Avoidable Event report; both of which are available at the agency and patient level. In addition, the Outcome and Process QM reports include HH Quality Initiative (HH QI) measures that are not publicly-reported.



- The **Quality of Patient Care Star Rating Provider Preview** Report displays the Quality of Patient Care<sup>18</sup> Star Rating and its derivation.

Both reports are made available in iQIES shared folders approximately three months in advance of the public reporting date. **Section 3** provides the schedule for the provision of the provider Preview Reports.

Reviewing these reports helps HHAs to identify data errors that affect performance scores. They also allow the providers to utilize the data for quality improvement purposes.

### **Section 1: iQIES Review and Correct Reports**

Below are the specifications for the **iQIES** Review and Correct Reports for quality measures presented in **Chapter 3**:

1. Reports contain quarterly rates and a cumulative rate.
  - a. The quarterly rates will be displayed using one quarter of data.
  - b. The cumulative rates will be displayed using all **applicable** data in the **reporting** period.
    - i. **For all measures:** the cumulative rate is derived by including all quality episode-level records in the numerator for the **reporting** period, which do not meet the exclusion criteria, and dividing by all **quality** episode-level records included in the denominator for the **reporting** period.
  - c. The data will be frozen 4.5 months after the end of each quarter (data submission deadline).
  - d. The measure calculations for the quarterly rates and the cumulative rates are refreshed weekly until the submission deadline occurs for that quarter.
2. Complete data (full reporting period) is available for previously existing quality measures. Only partial data (**less than 4 quarters**) will be available for new measures until a **full reporting** period (**4 quarters**) of data has accumulated. Once a **reporting** period of data has accumulated, as each quarter advances, the subsequent quarter will be added and the earliest quarter will be removed.
3. An illustration of the reporting timeline for the iQIES Review and Correct Reports for the HH QRP measures listed in Chapter 3 is provided in **Table 4-1**.

**Data calculation rule:** The calculations include all eligible quality episodes with end-of-care dates **within** the quarter. Further information on submission timelines can be obtained from: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Home-Health-Quality-Reporting-Data-Submission-Deadlines.html>

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<sup>18</sup> More information about the Quality of Patient Care star rating is available at <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/HHQIHomeHealthStarRatings.html>

**Table 4-1. Timeline for iQIES Review and Correct Reports for Assessment-Based (OASIS) Quality Measures and Care Compare Refreshes (Example Dates)**

| Review and Correct Periods                                  |  |  | Care Compare Refresh  |   |
|---|--|--|---|---|
| Review & Correct (R&C) Reports                              | Dates of Quality Episodes That May Be Corrected  | Deadline for submitting missing or corrected data  | Reporting Period  | Care Compare Refresh                        |
| <i>The date that these iQIES R&amp;C Reports are posted</i> | <i>Data can be corrected for quality episodes in the last quarter included in this Review and Correct Period</i> | <i>Last date of the Review and Correct Period for correcting data in the last quarter of this HHC reporting period</i> | <i>Refresh represents quality episodes ending during this time period</i> | <i>Month/Year Data is Publicly Reported</i> |
| 4/1/2022  | 1/1/2022-3/31/2022   | 8/15/2022  | 4/1/2021-3/31/2022  | January 2023                                |
| 7/1/2022  | 4/1/2022-6/30/2022   | 11/15/2022   | 7/1/2021-6/30/2022  | April 2023                                  |
| 10/1/2022   | 7/1/2022-9/30/2022   | 2/15/2023  | 10/1/2021-9/30/2022   | July 2023                                   |
| 1/1/2023  | 10/1/2022-12/31/2022   | 5/15/2023  | 1/1/2022-12/31/2022   | October 2023                                |
| 4/1/2023  | 1/1/2023-3/31/2023   | 8/15/2023  | 4/1/2022-3/31/2023  | January 2024                                |
| 7/1/2023  | 4/1/2023-6/30/2023   | 11/15/2023   | 7/1/2022-6/30/2023  | April 2024                                  |
| 10/1/2023   | 7/1/2023-9/30/2023   | 2/15/2024  | 10/1/2022-9/30/2023   | July 2024                                   |
| 1/1/2024  | 10/1/2023-12/31/2023   | 5/15/2024  | 1/1/2023-12/31/2023   | October 2024                                |

## Section 2: iQIES Quality Measure (QM) Reports

Below are the specifications for the iQIES QM Reports for the HH QRP measures presented in **Chapter 7**. The same steps are used to generate both agency-level and patient-level reports.

- Measures are calculated consistent with the methods in the previous section, **Chapter 4, Section 1**.
  - Only the cumulative rates will be displayed using all data in the **reporting** period.
- The illustration of the reporting timeline for the monthly iQIES QM Reports is provided in **Table 4-2**.
- Data calculation rule:** The calculations include quality episodes with end-of-care dates through the end of the month.

**Table 4-2. Data Included in the iQIES QM Reports for OASIS Quality Measures**

| IQIES QM Report Calculation Month | Discharges Through the Month of | Discharge Dates Included in the Report <sup>1</sup> |
|-----------------------------------|---------------------------------|---|
| January 2022                      | October 2021                    | November 1, 2020 – October 31, 2021                 |
| February 2022                     | November 2021                   | December 1, 2020 – November 30, 2021                |
| March 2022                        | December 2021                   | January 1, 2021 – December 31, 2021                 |
| April 2022                        | January 2022                    | February 1, 2021 – January 31, 2022                 |
| May 2022                          | February 2022                   | March 1, 2021 – February 28, 2022                   |
| June 2022                         | March 2022                      | April 1, 2021 – March 31, 2022                      |
| July 2022                         | April 2022                      | May 1, 2021 – April 30, 2022                        |
| August 2022                       | May 2022                        | June 1, 2021 – May 31, 2022                         |
| September 2022                    | June 2022                       | July 1, 2021 – June 30, 2022                        |
| October 2022                      | July 2022                       | August 1, 2021 – July 31, 2022                      |
| November 2022                     | August 2022                     | September 1, 2021 – August 31, 2022                 |
| December 2022                     | September 2022                  | October 1, 2021 – September 30, 2022                |
| January 2023                      | October 2022                    | November 1, 2021 – October 31, 2022                 |
| February 2023                     | November 2022                   | December 1, 2021 – November 30, 2022                |
| March 2023                        | December 2022                   | January 1, 2022 – December 31, 2022                 |
| April 2023                        | January 2023                    | February 1, 2022 – January 31, 2023                 |
| May 2023                          | February 2023                   | March 1, 2022 – February 28, 2023                   |
| June 2023                         | March 2023                      | April 1, 2022 – March 31, 2023                      |
| July 2023                         | April 2023                      | May 1, 2022 – April 30, 2023                        |
| August 2023                       | May 2023                        | June 1, 2022 – May 31, 2023                         |
| September 2023                    | June 2023                       | July 1, 2022 – June 30, 2023                        |
| October 2023                      | July 2023                       | August 1, 2022 – July 31, 2023                      |
| November 2023                     | August 2023                     | September 1, 2022 – August 31, 2023                 |
| December 2023                     | September 2023                  | October 1, 2022 – September 30, 2023                |

### ***Section 3: Provider Preview Reports***

Preview reports are provided for measures that are reported on Care Compare. Preview Reports are made available in HHAs' iQIES shared folders approximately three months prior to each Care Compare refresh. There are two types of preview reports, one that displays all measures as they would be shown on Care Compare in the next refresh and a separate preview report for the QoPC Star Rating. These reports are delivered separately into the iQIES shared folders.

## Chapter 5. Calculations for Assessment-Based (OASIS) Measures That Are Not Risk-Adjusted

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### Section 1: Introduction

This chapter presents technical details regarding the unadjusted calculation of the HH QRP quality measures that are based on a HH quality episodes as a unit of analysis.

The QMs are created from counts of HH quality episodes that meet certain criteria (as described in Chapter 7). For example, HH-level scores for the **Percent of Patients with an Admission and Discharge Functional Assessment and a Care Plan that Addresses Function** quality measure are computed by:

- 1) Counting HH quality episodes ending with discharge, death, or transfer to inpatient facility during the reporting period, other than those covered by generic exclusions (See Chapter 3 for definition of generic exclusions) ; and
- 2) Computing the percent of HH quality episodes with functional assessment data for each self-care and mobility activity and at least one self-care or mobility discharge goal.. The detailed logic for defining HH quality episodes is located in Chapter 3. The logic for defining each quality measure is presented in Quality Measure Logical Specifications (Chapter 7) of this manual.

### Section 2: Steps Used in National Quality Measure Calculations

This section outlines the steps used to calculate the observed (unadjusted) HH QRP quality measures. The examples in the steps below use Q1 2022 through Q4 2022 as the reporting period. The dates associated with these steps would be updated, as appropriate, for subsequent quarterly releases of the quality measures.

#### Measure Calculation Steps:

1. **OASIS Record Selection.** All HHA OASIS records with effective dates on or before the end of Q4 2022 are selected.
2. **HH Quality Episode Creation.** Using the methodology described in Chapter 3, HH quality episodes for HHA were created from the available data. The effective dates of the SOC/ROC assessments and the EOC assessments composing the quality episode are recorded.
3. **HH Quality Episode Selection.** All quality episodes with EOC effective dates within the reporting period are selected.
4. **Episode-level Quality Measure Score Calculation.** Quality measure scores are calculated separately for each HH quality episode.
  - a. Exclusions: For each quality measure with exclusions, excluded episodes are assigned a missing value for that quality measure.
  - b. Quality measure values: Does the HH quality episode meet the criteria for the quality measure numerator?
    - i. If “Yes”, then store a value of [1] for that quality measure
    - ii. If “No”, then store a value of [0] for that quality measure
5. **HHA-level Observed Quality Measures Scores.** For all quality measures, the HHA-level observed (unadjusted) quality measure scores are calculated using the [0] and [1] values stored for each quality episode. These **Observed quality measure score** reported via iQIES are not risk-adjusted.
  - a. Numerator: For each quality measure, count the total number of HH quality episodes that meet the criteria for the QM numerator for each HHA and sum for the HHA.

- b. Denominator: For each quality measure, count the total number of HH quality episodes retained after applying exclusions for each HHA and sum for the HHA.
  - c. HHA-level observed quality measure scores: Divide the numerator by the denominator for each quality measure and HHA. Multiply by 100 to obtain a percent value.
6. ***Final HHA-level Output File.*** The final HHA-level output files for the quality measures in the reporting period contain the following:
- a. HHA numerator counts
  - b. HHA denominator counts
  - c. HHA-level observed quality measure scores (reported for the unadjusted quality measures – see Chapter 7 for the list of unadjusted process measures)

## Chapter 6. Calculations for Assessment-Based (OASIS) Measures That Are Risk-Adjusted

---

### Section 1: Introduction

This chapter presents technical details regarding the risk-adjusted calculation of the HH QRP quality measures (QMs) and is applicable to the QMs that are calculated based on an HH quality episode, as a unit of analysis.

The QMs are created from counts of HH quality episodes that meet certain criteria. For example, HH-level observed (unadjusted) scores for Improvement in Bathing (NQF #0174 are computed by: 1) counting quality episodes where the patient improved in bathing from the start of care or resumption of care (SOC/ROC) to the end of care (EOC) and 2) computing the percent of quality episodes exhibiting improvement for a home health agency (HHA).

The detailed logic for defining HH quality episodes is located in Chapter 3. The logic for defining each quality measure is presented in the Quality Measure Logical Specifications (**Chapter 7**) of this manual.

### A Note on Risk Adjustment

Change in health status over time can occur either as a result of the care provided or the natural progression of disease and disability or recovery. In order to fairly compare providers, changes in outcomes due to care provision need to be disentangled from the natural progression of disease and disability **or recovery**. Risk adjustment compensates or adjusts for differences in risk factors so that providers' performance on outcome measures is not disproportionately affected by accepting certain types of patients, thereby reducing or eliminating incentives for providers to selectively accept or decline patients. Process measures are not risk adjusted, nor are certain outcome measures that are very low prevalence, are considered "never events", or are not used to compare providers (i.e., used only for providers' own quality improvement efforts).

The approach used to risk adjust involves adjusting quality measure scores directly, using logistic regression. This method of adjustment employs *quality episode-level covariates* that are found to increase or decrease the measure score. Detailed specifications for **quality episode-level covariates** are presented in **Chapter 7**, Quality Measure Logical Specifications. This approach involves the following steps:

- First, quality episode-level covariates are used in a logistic regression model to calculate a *predicted rate for each quality episode* (the probability that the quality episode will evidence the outcome, given the presence or absence of characteristics measured by the covariates at SOC/ROC). **Section 2** of this chapter presents the details for calculating predicted rates for quality episodes. **Section 3** of this chapter presents the details for how risk factors are identified for the prediction model.
- Then, an average of all quality episode-level predicted rates for the HHA is calculated to create an *agency's predicted rate*.
- The *agency's risk-adjusted rate* is based on a calculation which combines the *agency's predicted rate*, the *agency's observed rate*, and the *national predicted rate*.

The details for calculating agency's risk adjusted rates are presented in **Section 2** of this chapter. The parameters used for each release of the quality measures are presented in **Appendix A**.

Currently **six** of the **publicly reported** assessment-based quality measures for the HH setting are adjusted using quality episode-level **risk factors** for HH QRP:

- Improvement in Ambulation- Locomotion (NQF #0167) (CMS ID: 0183-11)

- Improvement in Bed Transferring (NQF #0175) (CMS ID: 1000-11)
- Improvement in Bathing (NQF #0174) (CMS ID: 0185-11)
- Improvement in Management of Oral Medications (NQF #0176) (CMS ID: 0189-11)
- Improvement in Dyspnea (NQF #0179) (CMS ID: 0187-11)
- Changes in Skin Integrity Post-Acute Care: Pressure Ulcer/Injury (CMS ID: 5852-11)

## Section 2: *Calculating Risk Adjusted Quality Measures*

The following steps are used to calculate each quality measure for a 12-month measure time window after the appropriate exclusions are made:

### A. Calculate the agency observed score for each month (**steps 1 through 3**)

#### **Step 1.** Calculate the denominator count:

Calculate the total number of quality episodes each month that do not meet the exclusion criteria following each measure's specifications.

#### **Step 2.** Calculate the numerator count:

Calculate the total number of quality episodes in the denominator whose OASIS assessments indicates meeting numerator criteria for each month, following each measure's specifications as outlined in chapter 7 below.

#### **Step 3.** Calculate the agency's monthly observed rate:

Divide the agency's numerator count by its denominator count to obtain the agency's observed rate; that is, divide the result of **step 2** by the result of **step 1**.

### B. Calculate the predicted rate for each quality episode (**steps 4 and 5**)

#### **Step 4.** Determine presence or absence of the risk factors for each patient.<sup>19</sup>:

If dichotomous risk factor covariates are used, assign covariate values, either '0' for covariate condition not present or '1' for covariate condition present, for each quality episode for each of the covariates as reported at SOC/ROC, as described in the section above.

#### **Step 5.** Calculate the predicted rate for each quality episode with the following formula:<sup>20</sup>

$$[1] \text{ Episode-level predicted QM rate} = 1 / [1 + e^{-X}]$$

Where e is the base of natural logarithms and X is a linear combination of the constant and the logistic regression coefficients times the covariate scores (from Formula [2], below).

$$[2] \text{ Quality measure triggered (yes=1, no=0)} = B_0 + B_1 * COV1 + B_2 * COV2 + \dots + B_N * COVN$$

<sup>19</sup> The Risk Adjustment Technical Specifications ([https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Downloads/RiskAdjustmentTechnicalSpecifications\\_January2023.pdf](https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Downloads/RiskAdjustmentTechnicalSpecifications_January2023.pdf)) contain details on how to create risk factors.

<sup>20</sup> Predicted rates are only calculated for episodes with non-missing observed rates.



Where B0 is the logistic regression constant, B1 is the logistic regression coefficient for the first covariate, COV1 is the first episode-level rate for the first covariate, B2 is the logistic regression coefficient for the second covariate, and COV2 is the second episode-level rate for the second covariate, etc. The regression constant and regression coefficients are provided in *Recalibrated Risk Adjustment Model\_Risk Factors\_Model Fit\_Coefficients.pdf*.

C. Calculate the agency's monthly predicted rate (**step 6**)

**Step 6.** Once a predicted QM rate has been calculated for all quality episodes, calculate the mean agency-level predicted QM rate by averaging all episode-level predicted values for that agency for each month.

D. Calculate national predicted rate (**step 7**)

**Step 7.** Calculate the monthly national predicted rate:

Once a predicted QM value has been calculated for all episodes, calculate the mean national-level predicted QM rate by averaging all episode-level predicted values for each month. Note that the sample will include only those quality episodes with non-missing data for the component covariates.

E. Calculate the agency's monthly risk-adjusted rate (**step 8**)

**Step 8.** Calculate the agency-level monthly risk-adjusted rate based on the agency-level monthly observed quality measure rate (**step 3**), agency-level monthly mean predicted quality measure rate (**step 6**), and national monthly mean predicted QM rate (**step 7**), using the following formula:

[3] agency risk adjusted rate = agency observed rate + national predicted rate – agency predicted rate

F. Calculate the agency's 12-month risk adjusted rate (**step 9**)

**Step 9.** Calculate the 12-month risk-adjusted rate by averaging the agency's monthly risk-adjusted rate (**step 8**) weighting by the HHA's number of episodes in each month over the 12-month period.

If the adjusted rate is greater than 100 percent, the adjusted rate is set to 100 percent. Similarly, if the result is a negative number the adjusted rate is set to zero.<sup>21</sup>

### Section 3: Identifying Risk Factors

The risk adjustment model presented in Appendix A 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:

<sup>21</sup> Except for Changes in Skin Integrity Post-Acute Care: Pressure Ulcer/Injury, if the observed rate equals 100 percent, then the risk adjusted rate is set to 100 percent. For Changes in Skin Integrity Post-Acute Care: Pressure Ulcer/Injury, if the observed rate equals 0 percent, then the risk adjusted rate is set to 0 percent.

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 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, HHAs were stratified across several observable characteristics, and the distributions of the risk-adjusted outcomes were checked to confirm that values remained similar across strata.

## Chapter 7. Measure Specifications for Assessment- Based (OASIS) Quality Measures

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### Contents

|   |           |
|---|-----------|
| <b>Introduction.....</b>  | <b>24</b> |
| <b>Process Measures .....</b>   | <b>25</b> |
| Timely Initiation of Care.....  | 25        |
| Influenza Immunization Received for Current Flu Season .....  | 26        |
| Drug Regimen Review Conducted with Follow-Up for Identified Issues.....   | 27        |
| Application of Percent of Long-Term Care Hospital Patients with an Admission<br>and Discharge Functional Assessment and a Care Plan that<br>Addresses Function..... | 28        |
| Drug Education on All Medications Provided to Patient/Caregiver.....  | 31        |
| Transfer of Health Information to the Patient .....   | 32        |
| Transfer of Health Information to the Provider .....  | 33        |
| <b>Outcome Measures .....</b>   | <b>34</b> |
| Improvement in Ambulation – Locomotion.....   | 34        |
| Improvement in Bed Transferring .....   | 35        |
| Improvement in Bathing .....  | 36        |
| Improvement in Management of Oral Medications .....   | 37        |
| Improvement in Dyspnea .....  | 38        |
| Percent of Residents Experiencing One or More Falls with Major Injury.....  | 39        |
| Changes in Skin Integrity Post-Acute Care: Pressure Ulcer/Injury.....   | 40        |

## Introduction

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This chapter provides the specifications for each of the OASIS-based process and outcomes measures in the HH QRP. Measures are based on information from the start or resumption of care and end of care from home health quality episodes. Start or resumption of care (SOC/ROC) is indicated with [1] following the OASIS item number and end of care (EOC) is indicated with [2] following the OASIS item number.

Some OASIS items used to calculate or risk-adjust HH QRP measures can be dashed at one or more data collection time points. These include M1028, M1060, M1311 (at Discharge only), GG0100, GG0110, GG0130, GG0170, M2001, M2003, M2005, D0150, J1800 and J1900. A dash (–) value indicates that no information is available. In general, CMS expects dash use to be a rare occurrence.

## Process Measures

### Timely Initiation of Care

**Table 7-1. Timely Initiation of Care NQF# 0526\* (CMS ID 0196-10)**

| Measure Description  |
|--|
| This measure reports the percentage of home health quality episodes in which the date of start or resumption of care was: (1) the same as the physician-ordered date, or (2) within two days of referral if no date was specified by the physician, or (3) within two days of inpatient discharge if the inpatient discharge was later than referral and no date was specified by the physician.   |
| Measure Specifications   |
| <p><b>Numerator</b></p> <p>Home health quality episodes for which the SOC/ROC date was:</p> <ul style="list-style-type: none"> <li>(1) the same as the physician-ordered date:<br/> <math>M0030[1] = M0102[1]</math> <p>or</p> </li> <li>(2) within two days of referral if no date was specified by the physician:<br/> <math>M0030[1] \leq M0104[1] + 2 \text{ Days if } M0102[1] = \text{NA}</math> <p>or</p> </li> <li>(3) if there was an inpatient discharge (<math>M1000[1] &lt;&gt; \text{NA}</math>), within two days of inpatient discharge if the inpatient discharge was later than referral and no date was specified by the physician<br/> <math>(M0030[1]) \leq M1005[1] + 2 \text{ Days if } (M1005[1]) &gt; M0104[1] \text{ and } M0102[1] = \text{NA})</math> </li> </ul> <p>If the episode begins with resumption of care, replace M0030[1] with M0032[1].</p> <p><b>Denominator</b></p> <p>All home health quality episodes except for those meeting the exclusion criteria.</p> <p><b>Denominator Exclusions</b></p> <ul style="list-style-type: none"> <li>– Episodes for which the physician-ordered date is NA and the SOC/ROC date was greater than two days after the physician referral date and there was an inpatient discharge and the inpatient discharge date is unknown:<br/> <math>M0102[1] = \text{NA and } M0030[1] &gt; M0104[1] + 2 \text{ Days and } M1000[1] &lt;&gt; \text{NA and } M1005[1] = \text{UK}</math> </li> </ul> <p><b>Measure Type</b></p> <p>Process - Timely Care</p> <p><b>OASIS Items Used</b></p> <p>(M0030) Start of Care Date<br/> (M0032) Resumption of Care Date<br/> (M0102) Date of Physician-ordered Start of Care<br/> (M0104) Date of Referral<br/> (M0100) Reason for Assessment<br/> (M1000) Inpatient Facility discharge<br/> (M1005) Inpatient Discharge Date</p> |

\* - The following measure was previously approved or given time limited endorsement by the National Quality Forum (NQF) but has been withdrawn from NQF submission.

### *Influenza Immunization Received for Current Flu Season*

**Table 7-2. Influenza Immunization Received for Current Flu Season NQF # 0522 (CMS ID 0212-10)**

| Measure Description  |
|--|
| This measure reports the percentage of home health quality episodes during which patients received <b>or were determined to have received</b> the influenza immunization for the current flu season.   |
| Measure Specifications   |
| <p><b>Numerator</b></p> <p>Home health quality episodes during which the patient a) received vaccination from the HHA or b) had received vaccination from HHA during earlier episode of care, or c) was determined to have received vaccination from another provider. This is determined by the following responses on the EOC [2] assessment for the quality episode:</p> <ul style="list-style-type: none"> <li>– M1046[2] = 01 or</li> <li>– M1046[2] = 02 or</li> <li>– M1046[2] = 03</li> </ul> <p><b>Denominator</b></p> <p>Home health quality episodes ending with a discharge or transfer to inpatient facility during the reporting period (M0100[2] = 06, 07, 09), except for those meeting the exclusion criteria.</p> <p>Note that If M1041[2] Influenza Vaccine Data Collection Period is marked “No” incorrectly, then the case is included in the denominator.</p> <p><b>Denominator Exclusions</b></p> <p>Home health quality episodes for which:</p> <ul style="list-style-type: none"> <li>– no part of the care was provided during October 1–March 31 as indicated by the SOC/ROC (M0030[1] or M0032[1]) and EOC (M0906[2]) dates</li> <li>or</li> <li>– the patient does not meet age/condition guidelines for influenza vaccine:<br/>M1046[2] = 06</li> </ul> <p><b>Measure Type</b></p> <p>Process – Prevention</p> <p><b>OASIS Items Used</b></p> <p>(M0100) Reason for Assessment<br/> (M0030) Start of Care Date<br/> (M0032) Resumption of Care Date<br/> (M0906) Discharge/Transfer/Death Date<br/> (M1041) Influenza Vaccine Data Collection Period:<br/> (M1046) Influenza Vaccine Received<br/> (M0100) Reason for Assessment</p> |

*Drug Regimen Review Conducted with Follow-Up for Identified Issues***Table 7-3. Drug Regimen Review Conducted with Follow-Up for Identified Issues (CMS ID 2946-10)**

| Measure Description  |
|--|
| This measure reports the percentage of home health quality episodes for which a drug regimen review was conducted at the start of care or resumption of care and completion of recommended actions from timely follow-up with a physician occurred each time potential clinically significant medication issues were identified throughout that quality episode.   |
| Measure Specifications   |
| <p><b>Numerator</b></p> <p>Home health quality episodes for which:</p> <ol style="list-style-type: none"> <li>(1) the agency conducted a drug regimen review at the start of care or resumption of care: (M2001[1] = 00, 01) or the patient is not taking any medications (M2001[1] = 09), and,</li> <li>(2) if potential clinically significant medication issues were identified at any time during the quality episode (M2001[1] = 01), then the HHA contacted a physician (or physician-designee) and completed prescribed/recommended actions by midnight of the next calendar day (M2003[1] = 01), and</li> <li>(3) the HHA contacted a physician (or physician-designee) and completed prescribed/recommended actions by midnight of the next calendar day each time potential clinically significant medication issues were identified since the start of care or resumption of care (M2005[2] = 01) or no potential clinically significant medications issues were identified since SOC/ROC (M2005[2] = 09).</li> </ol> <p><b>Denominator</b></p> <p>All home health quality episodes, except for those meeting the exclusion criteria.</p> <p><b>Denominator Exclusions</b></p> <p>None</p> <p><b>Measure Type</b></p> <p>Process- Prevention</p> <p><b>OASIS Items Used</b></p> <p>M2001 (Drug Regimen Review)<br/> M2003 (Medication Follow-up)<br/> M2005 (Medication Intervention)</p> |

**Application of Percent of Long-Term Care Hospital Patients with an Admission and Discharge Functional Assessment and a Care Plan that Addresses Function**

**Table 7-4. Application of Percent of Long-Term Care Hospital Patients with an Admission and Discharge Functional Assessment and a Care Plan that Addresses Function (CMS ID 5853-10)**

| Measure Description  |
|--|
| This measure reports the percentage of home health quality episodes in which the patient's mobility and self-care functional status was <b>assessed and</b> documented and at least one discharge goal was recorded.   |
| Measure Specifications   |
| <p><b>Numerator</b></p> <p>Home health quality episodes with functional assessment data for <b>12 specific</b> self-care and mobility <b>activities</b> and at least one self-care or mobility <b>discharge</b> goal.</p> <p>For home health <b>quality</b> episodes ending in a discharge from the agency (M0100[2] = 09), all three of the following are required for the patient to be counted in the numerator:</p> <ol style="list-style-type: none"> <li>A valid numeric score indicating the patient's functional status, or a valid code indicating the activity was not attempted for each of the functional assessment items on the SOC/ROC assessment;</li> <li>A valid numeric score, which is a discharge goal indicating the patient's expected level of independence or a valid code indicating the activity was not attempted, for at least one self-care or mobility item on the SOC/ROC assessment; and</li> <li>A valid numeric score indicating the patient's functional status, or a valid code indicating the activity was not attempted, for each of the <b>specified</b> functional assessment items on the discharge assessment.</li> </ol> <p>For home health episodes ending in a qualifying admission to an inpatient facility or death (M0100[2] = 06, 07, 08), the discharge functional status data would not be required for the episode to be included in the numerator. For these episodes, the following are required for these patients to be counted in the numerator:</p> <ol style="list-style-type: none"> <li>A valid numeric score indicating the patient's functional status, or a valid code indicating the activity was not attempted for each of the <b>specified</b> functional assessment items on the SOC/ROC assessment; and</li> <li>A valid numeric score, which is a discharge goal indicating the patient's expected level of independence or a valid code indicating the activity was not attempted, for at least one self-care or mobility item on the SOC/ROC assessment.</li> </ol> <p>A dash (–) value for an item indicates that no information is available and is not a valid response for the numerator.</p> <p><b>I. Specifications for episodes with complete admission functional assessment data:</b></p> <p>For admission functional assessment data to be complete, each condition listed below must be met:</p> <ol style="list-style-type: none"> <li>GG0130A1[1]. Eating = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and</li> <li>GG0130B1[1]. Oral hygiene = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and</li> <li>GG0130C1[1]. Toileting hygiene = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and</li> <li>GG0170B1[1]. Sit to lying = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and</li> <li>GG0170C1[1]. Lying to sitting on side of bed = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and</li> <li>GG0170D1[1]. Sit to stand = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and</li> <li>GG0170E1[1]. Chair/bed-to-chair transfer = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and</li> <li>GG0170F1[1]. Toilet transfer = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and</li> </ol> <p>For patients who are walking as indicated by GG0170I1 = [01, 02, 03, 04, 05, 06], include items:</p> <ol style="list-style-type: none"> <li>GG0170J1[1]. Walk 50 feet with two turns = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88] and GG0170K1[1]. Walk 150 feet = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]</li> </ol> <p>For patients who use a wheelchair as indicated by GG170Q1[1] = 1, include items:</p> <ol style="list-style-type: none"> <li>GG0170R1[1]. Wheel 50 feet with two turns = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88] and GG0170RR1[1]. Indicate the type of wheelchair/scooter used = [1, 2] and</li> </ol> |



GG0170S1[1]. Wheel 150 feet = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88] and  
 GG0170SS1[1]. Indicate the type of wheelchair/scooter used = [1, 2]

## II. Specifications for a discharge goal (documenting a care plan that includes function)

For the discharge goal, at least one of the items listed below must have a valid code as specified.

1. GG0130A2[1]. Eating = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; or
2. GG0130B2[1]. Oral hygiene = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; or
3. GG0130C2[1]. Toileting hygiene = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; or
4. GG0170B2[1]. Sit to lying = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; or
5. GG0170C2[1]. Lying to sitting on side of bed = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; or
6. GG0170D2[1]. Sit to stand = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; or
7. GG0170E2[1]. Chair/bed-to-chair transfer = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; or
8. GG0170F2[1]. Toilet transfer = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; or
9. GG0170J2[1]. Walk 50 feet with two turns = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; or
10. GG0170K2[1]. Walk 150 feet = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; or
11. GG0170R2[1]. Wheel 50 feet with two turns = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; or
12. GG0170S2[1]. Wheel 150 feet = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88].

## III. Specifications for complete discharge functional assessment data

For discharge functional assessment data to be complete, each condition listed below must be met. This only applies episodes for which the patient was discharged from the agency (M0100\_ASSMT\_REASON[2] = 09).

1. GG0130A3[2]. Eating = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and
2. GG0130B3[2]. Oral hygiene = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and
3. GG0130C3[2]. Toileting hygiene = [01, 02, 03, 04, 05, 06, 07, 09, 88]; and
4. GG0170B3[2]. Sit to lying = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and
5. GG0170C3[2]. Lying to sitting on side of bed = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and
6. GG0170D3[2]. Sit to stand = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and
7. GG0170E3[2]. Chair/bed-to-chair transfer = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and
8. GG0170F3[2]. Toilet transfer = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and

For patients who are walking as indicated by GG0170I3 = [01, 02, 03, 04, 05, 06] include items:

9. GG0170J3[2]. Walk 50 feet with two turns = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88]; and  
 GG0170K3[2]. Walk 150 feet = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88].

For patients who use a wheelchair as indicated by GG0170Q3[2] = 1, include items:

10. GG0170R3[2]. Wheel 50 feet with two turns = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88] and  
 GG0170RR3[2]. Indicate the type of wheelchair/scooter used = [1, 2] and  
 GG0170S3[2]. Wheel 150 feet = [01, 02, 03, 04, 05, 06, 07, 09, 10, 88] and  
 GG0170SS3[2]. Indicate the type of wheelchair/scooter used = [1, 2].

### Denominator

All home health quality episodes, except for those meeting the exclusion criteria.

### Denominator Exclusions

None

### Measure Type

Process – Assessment

### OASIS Items Used

(M0100) Reason for Assessment  
(GG0130A) Eating  
(GG0130B) Oral Hygiene  
(GG0130C) Toileting Hygiene  
(GG0170B) Sit to Lying  
(GG0170C) Lying to sitting on the side of the bed  
(GG0170D) Sit to Stand  
(GG0170E) Chair/bed-to-chair transfer  
(GG0170F) Toilet transfer  
(GG0170J) Walk 50 feet with 2 turns  
(GG0170K) Walk 150 feet  
(GG0170R) Wheel 50 feet with 2 turns  
(GG0170RR) Type of wheelchair  
(GG0170S) Wheel 150 feet  
(GG0170SS) Type of wheelchair

*Drug Education on All Medications Provided to Patient/Caregiver***Table 7-5. Drug Education on All Medications Provided to Patient/Caregiver (CMS ID 2705-10)**

| <b>Measure Description</b>  |
|---|
| This measure reports the percentage of home health quality episodes during which patient/caregiver was instructed on how to monitor the effectiveness of drug therapy, how to recognize potential adverse effects, and how and when to report problems (at the time of or at any time since the most recent SOC/ROC assessment).  |
| <b>Measure Specifications</b>   |
| <p><b>Numerator</b></p> <p>Home health quality episodes during which patient/caregiver was instructed on how to monitor the effectiveness of drug therapy, how to recognize potential adverse effects, and how and when to report problems (at the time of or at any time since the most recent SOC/ROC assessment).</p> <p>— M2016[2] = 01</p> <p><b>Denominator</b></p> <p>Home health quality episodes ending with a discharge or transfer to inpatient facility during the reporting period (M0100[2] = 06, 07, 09), except for those meeting the exclusion criteria.</p> <p><b>Denominator Exclusions</b></p> <p>Home health quality episodes for which the patient was not taking any drugs (M2016[2] = NA).</p> <p><b>Measure Type</b></p> <p>Process – Education</p> <p><b>OASIS Items Used</b></p> <p>(M0100) Reason for Assessment</p> <p>(M2016) Patient/Caregiver Drug Education Intervention</p> |

*Transfer of Health Information to the Patient***Table 7-6. Transfer of Health Information to the Patient (CMS ID=3496-10)**

| Measure Description  |
|--|
| This proposed measure assesses for and reports on the timely transfer of health information, i.e., a current reconciled medication list, to the patient when discharged from home health to a private home/apartment, board and care home, assisted living, group home, or transitional living.  |
| Measure Specifications   |
| <p><b>Numerator</b></p> <p>The number of quality episodes ending in a discharge from the agency (M0100[2] = [09]), for which the OASIS indicated that the following is true:</p> <p>At the time of discharge (M2420[2] = [1, 4, or UK]), the agency provided a current reconciled medication list to the patient, family, and/or caregiver (A2123= [1]).</p> <p><b>Denominator</b></p> <p>The denominator for this measure is the number of quality episodes ending in discharge to a private home/ apartment, board/care, assisted living, group home, or transitional living.</p> <p><b>Denominator Exclusions</b></p> <p>Patients who die during the episode (M0100[2] = 08). Patients discharged to a location not specified in denominator statement (M0100[2] = [06, 07, 08] or (M0100[2] = [09] and M2420[2] = [2, 3])).</p> <p><b>Measure Type</b></p> <p>Process</p> <p><b>OASIS Items Used</b></p> <p>M0100 (Reason for Assessment)<br/> A2123 (Provision of Current Reconciled Medication List to Patient)<br/> A2124 (Route of Current Medication List Transmission to Patient)<br/> M2420 (Discharge Disposition)</p> |

## Transfer of Health Information to the Provider

**Table 7-7. Transfer of Health Information to the Provider (CMS ID=5652-10)**

| Measure Description  |
|--|
| The proposed measure, the Transfer of Health Information to the Provider, assesses the timeliness of the transfer of health information, specifically transfer of a reconciled medication list. This measure evaluates for the transfer of information when a patient is transferred or discharged to a subsequent provider. For this proposed measure, the subsequent provider is defined as a short-term general hospital, a SNF, intermediate care, home under care of an organized home health service organization or hospice, hospice in an institutional facility, an IRF, an LTCH, a Medicaid nursing facility, an inpatient psychiatric facility, or a critical access hospital.  |
| Measure Specifications   |
| <p><b>Numerator</b></p> <p>The number of home health quality episodes ending in discharge or transfer (M0100[2]=[6,7, or 9] and M2420[2] = [2 or 3] for which the OASIS indicated that the following is true:</p> <p>At the time of discharge/transfer, the agency provided a current reconciled medication list to the subsequent provider (A2120[2]= [1] or (A2121[2] = [1]).</p> <p><b>Denominator</b></p> <p>The denominator is the number quality episodes ending in discharge or/transfer to a short-term general hospital, a SNF, intermediate care, home under care of another organized home health service organization or hospice, hospice in an institutional facility, a swing bed, an IRF, a LTCH, a Medicaid nursing facility, an inpatient psychiatric facility, or a critical access hospital.</p> <p><b>Denominator Exclusions</b></p> <p>Patients who die during the episode (M0100[2] = 08). Patients discharged to a location not specified in denominator statement (M2420[2] = [1, 4, or UK]).</p> <p><b>Measure Type</b></p> <p>Process</p> <p><b>OASIS Items Used</b></p> <p>M100 (Reason for Assessment)<br/> A2120 (Provision of Current Reconciled Medication List to Subsequent Provider at Transfer)<br/> A2121 (Provision of Current Reconciled Medication List to Subsequent Provider at Discharge)<br/> A2122 (Route of Current Medication List Transmission to Subsequent Provider)<br/> M2420 (Discharge Disposition)</p> |

## Outcome Measures

### *Improvement in Ambulation – Locomotion*

**Table 7-8. Improvement in Ambulation – Locomotion NQF #0167 (CMS ID 0183-11)**

| Measure Description   |
|---|
| This measure reports the percentage of home health quality episodes during which the patient improved in ability to ambulate or, if non-ambulatory, improved in ability to propel self in a wheelchair.   |
| Measure Specifications  |
| <p><b>Numerator</b></p> <p>Home health quality episodes for which the response on the discharge assessment indicates less impairment in ambulation/locomotion compared to start (or resumption) of care. This is determined by the following responses on the SOC/ROC [1] and EOC [2] assessments for the quality episode:</p> <p>M1860[2] &lt; M1860[1]</p> <p><b>Denominator</b></p> <p>Home health quality episodes ending with a discharge from the agency during the reporting period (M0100[2] = 09), except for those meeting the exclusion criteria.</p> <p><b>Denominator Exclusions</b></p> <p>Home health quality episodes for which the patient, at start/resumption of care, was able to independently walk (M1860[1] = 00), or the patient was nonresponsive (M1700[1] = 04 or M1710[1] = NA or M1720[1] = NA), or was discharged to a non-institutional hospice (M2420[2] = 03) at end of care (M0100[2] = 09).</p> <p><b>Measure Type</b></p> <p>End Result Outcome – Functional</p> <p><b>OASIS Items Used</b></p> <p>(M0100) Reason for Assessment<br/> (M1860) Ambulation/ Locomotion<br/> (M1700) Cognitive Functioning<br/> (M1710) When Confused<br/> (M1720) When Anxious<br/> (M2420) Discharge Disposition</p> |
| Covariates  |
| See the Risk Adjustment Technical Specifications in Appendix A below.   |

*Improvement in Bed Transferring***Table 7-9. Improvement in Bed Transferring NQF #0175 (CMS ID 1000-11)**

| Measure Description   |
|---|
| This measure reports the percentage of home health quality episodes during which the patient improved in ability to get in and out of bed.  |
| Measure Specifications  |
| <p><b>Numerator</b></p> <p>Home health quality episodes for which the response on the discharge assessment indicates less impairment in bed transferring compared to start (or resumption) of care. This is determined by the following responses on the SOC/ROC [1] and EOC [2] assessments for the quality episode:</p> <p>M1850[2] &lt; M1850[1]</p> <p><b>Denominator</b></p> <p>Home health quality episodes ending with a discharge from the agency during the reporting period (M0100[2] = 09), except for those meeting the exclusion criteria.</p> <p><b>Denominator Exclusions</b></p> <p>Home health quality episodes for which the patient, at start/resumption of care, was able to transfer independently (M1850[1] = 00), or the patient was nonresponsive (M1700[1] = 04 or M1710[1] = NA or M1720[1] = NA), or was discharged to a non-institutional hospice (M2420[2] = 03) at end of care M0100[2] = 09).</p> <p><b>Measure Type</b></p> <p>End Result Outcome - Functional</p> <p><b>OASIS Items Used</b></p> <p>(M0100) Reason for Assessment<br/> (M1850) Transferring<br/> (M1700) Cognitive Functioning<br/> (M1710) When Confused<br/> (M1720) When Anxious<br/> (M2420) Discharge Disposition</p> |
| Covariates  |
| See the Risk Adjustment Technical Specifications in Appendix A below.   |

*Improvement in Bathing***Table 7-10. Improvement in Bathing NQF# 0174 (CMS ID 0185-11)**

| Measure Description   |
|---|
| This measure reports the percentage of home health quality episodes during which the patient got better at bathing self.  |
| Measure Specifications  |
| <p><b>Numerator</b></p> <p>Home health quality episodes for which the response on the discharge assessment indicates less impairment in bathing compared to start (or resumption) of care. This is determined by the following responses on the SOC/ROC [1] and EOC [2] assessments for the quality episode:</p> <p>M1830[2] &lt; M1830[1]</p> <p><b>Denominator</b></p> <p>Home health quality episodes ending with a discharge from the agency during the reporting period (M0100[2] = 09), except for those meeting the exclusion criteria.</p> <p><b>Denominator Exclusions</b></p> <p>Home health quality episodes for which the patient, at start/resumption of care, <b>was able to bathe independently</b> (M1830[1] = 00), or the patient was nonresponsive (<b>M1700[1] = 04 or M1710[1] = NA or M1720[1] = NA</b>), or <b>was discharged to a non-institutional hospice</b> (<b>M2420[2] = 03</b>) at end of care M0100[2] = 09).</p> <p><b>Measure Type</b></p> <p>End Result Outcome - Functional</p> <p><b>OASIS Items Used</b></p> <p>(M0100) Reason for Assessment<br/> (M1830) Bathing<br/> (M1700) Cognitive Functioning<br/> (M1710) When Confused<br/> (M1720) When Anxious<br/> <b>(M2420) Discharge Disposition</b></p> |
| Covariates  |
| See the Risk Adjustment Technical Specifications in Appendix A below.   |



### Improvement in Management of Oral Medications

**Table 7-11. Improvement in Management of Oral Medications NQF # 0176 (CMS ID 0189-11)**

| Measure Description  |
|--|
| This measure reports the percentage of home health quality episodes during which the patient improved in ability to take their medicines correctly (by mouth).   |
| Measure Specifications   |
| <p><b>Numerator</b></p> <p>Home health quality episodes where the value recorded on the discharge assessment indicates less impairment in taking oral medications correctly at discharge than at start (or resumption) of care. This is determined by the following responses on the SOC/ROC [1] and EOC [2] assessments for the quality episode:</p> <p>M2020[2] &lt; M2020[1]</p> <p><b>Denominator</b></p> <p>Home health quality episodes ending with a discharge from the agency during the reporting period (M0100[2] = 09), except for those meeting the exclusion criteria.</p> <p><b>Denominator Exclusions</b></p> <p>Home health quality episodes for which the patient, at start/resumption of care, was able to take oral medications correctly without assistance or supervision (M2020[1] = 00) or patient has no oral medications prescribed (M2020[1] = (NA,'^',')) or M2020[2] = (NA)) or the patient was nonresponsive (M1700[1] = 04 or M1710[1] = NA or M1720[1] = NA), or was discharged to a non-institutional hospice (M2420[2] = 03) at end of care M0100[2] = 09).</p> <p>Note that '^' indicates the item was skipped due to a skip pattern.</p> <p><b>Measure Type</b></p> <p>End Result Outcome - Functional</p> <p><b>OASIS Items Used</b></p> <p>(M0100) Reason for Assessment<br/> (M2020) Management of Oral Medications<br/> (M1700) Cognitive Functioning<br/> (M1710) When Confused<br/> (M1720) When Anxious<br/> (M2420) Discharge Disposition</p> |
| Covariates   |
| See the Risk Adjustment Technical Specifications in Appendix A below.  |

*Improvement in Dyspnea***Table 7-12. Improvement in Dyspnea NQF #0179\* (CMS ID 0187-11)**

| Measure Description   |
|---|
| This measure reports the percentage of home health quality episodes during which the patient became less short of breath or dyspneic.   |
| Measure Specifications  |
| <p><b>Numerator</b></p> <p>Home health quality episodes where the discharge assessment indicates less dyspnea at discharge than at start (or resumption) of care. This is determined by the following responses on the SOC/ROC [1] and EOC [2] assessments for the quality episode:</p> <p>M1400 [2] &lt; M1400[1]</p> <p><b>Denominator</b></p> <p>Home health quality episodes ending with a discharge from the agency during the reporting period (M0100[2] = 09), except for those meeting the exclusion criteria.</p> <p><b>Denominator Exclusions</b></p> <p>Home health quality episodes for which the patient, at start/resumption of care, was not short of breath at any time M1400[1] = 00 or was discharged to a non-institutional hospice (M2420[2] = 03) at end of care M0100[2] = 09).</p> <p><b>Measure Type</b></p> <p>End Result Outcome – Health</p> <p><b>OASIS Items Used</b></p> <p>(M0100) Reason for Assessment<br/>(M1400) When is the patient dyspneic?<br/>(M2420) Discharge Disposition</p> <p><b>Covariates</b></p> <p>See the Risk Adjustment Technical Specifications in Appendix A below.</p> |

\* - The following measure was previously approved or given time limited endorsement by the National Quality Forum (NQF) but has been withdrawn from NQF submission.

### Percent of Residents Experiencing One or More Falls with Major Injury

**Table 7-13. Application of Percent of Residents Experiencing One or More Falls with Major Injury NQF # 0674 (CMS ID 3493-10)**

| Measure Description  |
|--|
| This measure reports the percentage of quality episodes in which the patient experiences one or more falls with major injury (defined as bone fractures, joint dislocations, closed-head injuries with altered consciousness, or subdural hematoma) during the home health <b>quality</b> episode.   |
| Measure Specifications   |
| <p><b>Numerator</b></p> <p>Home health quality episodes in which the patient experienced one or more falls since SOC/ROC (J1800[2] = 1) that resulted in major injury during the episode of care (J1900C[2] = 1, 2).</p> <p><b>Denominator</b></p> <p>All home health quality episodes, except for those meeting the exclusion criteria.</p> <p><b>Denominator Exclusions</b></p> <p>Home health episodes for which the occurrence of falls was not assessed (J1800[2] = '-' or J1900C = '^') or the assessment indicated a fall (J1800[2] = 1) and the number of falls with major injury was not assessed (J1900C[2] = '-').</p> <p>Note that '^' indicates the item was skipped due to a skip pattern, and that '-' indicates the item was not assessed/no information.</p> <p><b>Measure Type</b></p> <p>End Result Outcome – Health</p> <p><b>OASIS Items Used</b></p> <p>(J1800) Any falls since SOC/ROC<br/>(J1900C) Number of falls since SOC/ROC</p> |
| Covariates   |
| This measure will not be risk adjusted. Falls with major injury are considered “never events” and as such are not to be risk adjusted.   |

## Changes in Skin Integrity Post-Acute Care: Pressure Ulcer/Injury

**Table 7-14. Changes in Skin Integrity Post-Acute Care: Pressure Ulcer/Injury (CMS ID 5852-11)**

| Measure Description   |
|---|
| Percentage of quality episodes in which the patient has one or more Stage 2-4 pressure ulcers, or an unstageable ulcer, present at discharge that are new or worsened since the beginning of the quality episode.   |
| Measure Specifications  |
| <p><b>Numerator</b></p> <p>Home health quality episodes for which the response on the discharge assessment indicates one or more new or worsened Stage 2-4 or unstageable pressure ulcers compared to start (or resumption) of care. This is determined by the following responses on the EOC [2] assessments for the quality episode:</p> <ul style="list-style-type: none"> <li>– M1311A1[2] - M1311A2[2] &gt; 0, or</li> <li>– M1311B1[2] - M1311B2[2] &gt; 0, or</li> <li>– M1311C1[2] - M1311C2[2] &gt; 0, or</li> <li>– M1311D1[2] - M1311D2[2] &gt; 0, or</li> <li>– M1311E1[2] - M1311E2[2] &gt; 0, or</li> <li>– M1311F1[2] - M1311F2[2] &gt; 0</li> </ul> <p>Note: If one or more (but not all) item pair(s) contain at least one dash value ('-') the item pair(s) is/are ignored and the remaining item pair(s) is/are evaluated.</p> <p><b>Denominator</b></p> <p>Home health quality episodes ending with a discharge from the agency during the reporting period (M0100[2] = 09), except for those meeting the exclusion criteria.</p> <p><b>Denominator Exclusions</b></p> <p>Home health quality episodes for which the discharge assessment lacks a useable response:</p> <ul style="list-style-type: none"> <li>– (M1311A1[2] = '-' and/or M1311A2[2] = '-'), and</li> <li>– (M1311B1[2] = '-' and/or M1311B2[2] = '-'), and</li> <li>– (M1311C1[2] = '-' and/or M1311C2[2] = '-'), and</li> <li>– (M1311D1[2] = '-' and/or M1311D2[2] = '-'), and</li> <li>– (M1311E1[2] = '-' and/or M1311E2[2] = '-'), and</li> <li>– (M1311F1[2] = '-' and/or M1311F2[2] = '-')</li> </ul> <p>Note: Episodes with skipped responses ('^') are <i>included</i> in the denominator.</p> <p><b>Measure Type</b></p> <p>End Result Outcome – Health</p> <p><b>OASIS Items Used</b></p> <p>(M0100) Reason for Assessment<br/> (M1311A1) Number of Stage 2 pressure ulcers; (M1311A2) Number of these Stage 2 pressure ulcers that were present at the most recent SOC/ROC<br/> (M1311B1) Number of Stage 3 pressure ulcers; (M1311B2) Number of these Stage 3 pressure ulcers that were present at the most recent SOC/ROC<br/> (M1311C1) Number of Stage 4 pressure ulcers; (M1311B2) Number of these Stage 4 pressure ulcers that were present at the most recent SOC/ROC<br/> (M1311D1) Number of unstageable pressure ulcer/injuries due to non-removable dressing/device;<br/> (M1311D2) Number of <u>these</u> unstageable pressure ulcer/injuries that were present at the most recent SOC/ROC<br/> (M1311E1) Number of unstageable pressure ulcers due to coverage of wound bed by slough and/or eschar;<br/> (M1311E2) Number of <u>these</u> unstageable pressure ulcers that were present at the most recent SOC/ROC<br/> (M1311F1) Number of unstageable pressure injuries presenting as deep tissue injury;<br/> (M1311F1) Number of <u>these</u> unstageable pressure injuries that were present at the most recent SOC/ROC</p> |

**Covariates**

See the Risk Adjustment Technical Specifications in the Downloads section:

<https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Downloads/HHQRP-Measure-Specifications-Changes-in-Skin-Integrity.pdf>

## Appendix A: Model Parameters

**Table A-1. Description of Risk Factors**

Recalibrated model, effective CY 2023

| Risk Factor # | Risk Factor                          | Covariate   | Response Notes                             | OASIS Item   | OASIS Item Description                                  | Variable Name     | Excluded Category Indicator |
|---------------|--------------------------------------|---|--|--------------|---|-------------------|-----------------------------|
| 1             | Age                                  | Age: 0-54   | Calculated off birth date                  | M0066        | Birth Date  | AGE_0_54          |                             |
|               |                                      | Age: 55-59  | Calculated off birth date                  | M0066        | Birth Date  | AGE_55_59         |                             |
|               |                                      | Age: 60-64  | Calculated off birth date                  | M0066        | Birth Date  | AGE_60_64         |                             |
|               |                                      | Age: 65-69  | Calculated off birth date                  | M0066        | Birth Date  | AGE_65_69         | Excluded category           |
|               |                                      | Age: 70-74  | Calculated off birth date                  | M0066        | Birth Date  | AGE_70_74         |                             |
|               |                                      | Age: 75-79  | Calculated off birth date                  | M0066        | Birth Date  | AGE_75_79         |                             |
|               |                                      | Age: 80-84  | Calculated off birth date                  | M0066        | Birth Date  | AGE_80_84         |                             |
|               |                                      | Age: 85-89  | Calculated off birth date                  | M0066        | Birth Date  | AGE_85_89         |                             |
|               |                                      | Age: 90-94  | Calculated off birth date                  | M0066        | Birth Date  | AGE_90_94         |                             |
|               |                                      | Age: 95+  | Calculated off birth date                  | M0066        | Birth Date  | AGE_95PLUS        |                             |
| 2             | Gender                               | Patient is female                                   | response 2                                 | M0069        | Gender  | GENDER_FEMALE     | Excluded category           |
|               |                                      | Patient is male                                     | response 1                                 | M0069        | Gender  | GENDER_MALE       |                             |
| 3             | Payment source                       | Payment source: Medicare FFS only                   | response 1 & NOT any other response        | M0150        | Current Payment Sources for Home Care                   | PAY_MCARE_FFS     | Excluded category           |
|               |                                      | Payment source: Medicare HMO only                   | response 2 & NOT any other response        | M0150        | Current Payment Sources for Home Care                   | PAY_MCARE_HMO     |                             |
|               |                                      | Payment source: Medicare and Medicaid               | response (1 or 2) & (3 or 4)               | M0150        | Current Payment Sources for Home Care                   | PAY_MCAREANDMCAID |                             |
|               |                                      | Payment Source: Medicaid only                       | response (3 or 4) & NOT any other response | M0150        | Current Payment Sources for Home Care                   | PAY_MCAID_ONLY    |                             |
|               |                                      | Payment Source: Other combinations                  | Not one of the above four categories       | M0150        | Current Payment Sources for Home Care                   | PAY_OTHER_COMBO   |                             |
| 4             | SOC/ROC and Admission Source         | Start of Care and inpatient admission               | M0100 = 1 & M1000 = 1, 2, 3, 4, 5, or 6    | M0100, M1000 | (M0100) Reason for assessment; (M1000) Admission source | SOC_INPT          | Excluded category           |
|               |                                      | Start of Care and community admission               | M0100 = 1 & M1000 NOT 1, 2, 3, 4, 5, or 6  | M0100, M1000 | (M0100) Reason for assessment; (M1000) Admission source | SOC_COMM          |                             |
|               |                                      | Resumption of care (after inpatient stay)           | M0100=3                                    | M0100        | Reason for assessment                                   | ROC               |                             |
| 5             | Post-acute facility admission source | Discharged from post-acute facility in past 14 days | response 1, 2, 4, 5, or 6                  | M1000        | Inpatient Facilities                                    | INPT_POSTACUTE    |                             |
|               |                                      | Not discharged from post-acute facility             | NOT response 1, 2, 4, 5, and 6             | M1000        | Inpatient Facilities                                    | INPT_NOPOSTACUTE  | Excluded category           |

| Risk Factor # | Risk Factor                | Covariate  | Response Notes  | OASIS Item     | OASIS Item Description   | Variable Name       | Excluded Category Indicator |
|---------------|----------------------------|--|---|----------------|--|---------------------|-----------------------------|
| 6             | Risk of Hospitalization    | Risk for Hospitalization: History of falls in past 12 months                             | response 1  | M1033          | Risk for Hospitalization   | RISK_HSTRY_FALLS    |                             |
|               |                            | Risk for Hospitalization: Unintentional weight loss in past 12 months                    | response 2  | M1033          | Risk for Hospitalization   | RISK_WEIGHTLOSS     |                             |
|               |                            | Risk for Hospitalization: Multiple hospitalizations in past 6 months                     | response 3  | M1033          | Risk for Hospitalization   | RISK_MLTPL_HOSPZTN  |                             |
|               |                            | Risk for Hospitalization: Multiple ED visits in past 6 months                            | response 4  | M1033          | Risk for Hospitalization   | RISK_ED             |                             |
|               |                            | Risk for Hospitalization: Recent mental/emotional decline in past 3 months               | response 5  | M1033          | Risk for Hospitalization   | RISK_RCNT_DCLN      |                             |
|               |                            | Risk for Hospitalization: Difficulty complying with medical instruction in past 3 months | response 6  | M1033          | Risk for Hospitalization   | RISK_COMPLY         |                             |
|               |                            | Risk for Hospitalization: Taking five or more medications                                | response 7  | M1033          | Risk for Hospitalization   | RISK_5PLUS_MDCTN    |                             |
|               |                            | Risk for Hospitalization: Reports exhaustion   | response 8  | M1033          | Risk for Hospitalization   | RISK_EXHAUST        |                             |
|               |                            | Risk for Hospitalization: Other unlisted risk factors                                    | response 9  | M1033          | Risk for Hospitalization   | RISK_OTHR           |                             |
|               |                            | None of the above  | response 10   | M1033          | Risk for Hospitalization   | RISK_NONE           |                             |
| 7             | Availability of Assistance | Around the clock   | response 1, 6, or 11  | M1100          | Patient Living Situation   | ASSIST_ARND_CLOCK   |                             |
|               |                            | Regular daytime  | response 2, 7, or 12  | M1100          | Patient Living Situation   | ASSIST_REGDAY       |                             |
|               |                            | Regular nighttime  | response 3, 8, or 13  | M1100          | Patient Living Situation   | ASSIST_REGNITE      |                             |
|               |                            | Occasional/none  | response 4, 5, 9, 10, 14, or 15                             | M1100          | Patient Living Situation   | ASSIST_OCC_NONE     | Excluded category           |
|               | Living Arrangement         | Living Arrangement: Lives alone  | response 1, 2, 3, 4, or 5                                   | M1100          | Patient Living Situation   | LIV_ALONE           |                             |
|               |                            | Living Arrangement: Lives with another person  | response 6, 7, 8, 9, or 10                                  | M1100          | Patient Living Situation   | LIV_OTHERS          | Excluded category           |
|               |                            | Living Arrangement: Lives in congregate situation  | response 11, 12, 13, 14, or 15                              | M1100          | Patient Living Situation   | LIV_CONGREGATE      |                             |
| 8             | Pressure Ulcers            | Pressure ulcer: None or Stage I only present   | M1306 response 0 & M1322 response 0, 1, 2, 3, or 4          | M1306<br>M1322 | At least 1 Stage 2 or unstageable PU?<br>Current number of Stage 1 PUs | PU_NONE_STG1ONLY    | Excluded category           |
|               |                            | Pressure ulcer: Stage II or higher or unstageable present                                | response A1 > 0 OR B1 > 0 OR C1 > 0 OR D1>0 OR E1>0 OR F1>0 | M1311          | Number of PUs at each stage  | PU_STG2PLUS_UNSTG   |                             |
| 9             | Stasis Ulcer               | Stasis Ulcer: None   | response 0 or 3   | M1330          | Does this patient have a Stasis Ulcer?                                 | STAS_ULCR_NONE      | Excluded category           |
|               |                            | Stasis Ulcer: 1 observable stasis ulcer  | response 1  | M1332          | Number of stasis ulcers  | STAS_ULCR_OBS_1     |                             |
|               |                            | Stasis Ulcer: Multiple observable stasis ulcers  | response 2,3, or 4  | M1332          | Number of stasis ulcers  | STAS_ULCR_OBS_2PLUS |                             |

| Risk Factor # | Risk Factor        | Covariate  | Response Notes          | OASIS Item | OASIS Item Description                                       | Variable Name      | Excluded Category Indicator |
|---------------|--------------------|--|-------------------------|------------|--|--------------------|-----------------------------|
| 10            | Surgical Wound     | Status of Surgical Wound: None   | Not response 0, 1, 2, 3 | M1342      | Status of Most Problematic Surgical Wound that is Observable | SRG_WND_OBS_NONE   | Excluded category           |
|               |                    | Status of Surgical Wound: Newly epithelialized                           | response 0              | M1342      | Status of Most Problematic Surgical Wound that is Observable | SRG_WND_OBS_EPI    |                             |
|               |                    | Status of Surgical Wound: Fully granulating or early/partial granulation | response 1 or 2         | M1342      | Status of Most Problematic Surgical Wound that is Observable | SRG_WND_OBS_GRAN   |                             |
|               |                    | Status of Surgical Wound: Not healing                                    | response 3              | M1342      | Status of Most Problematic Surgical Wound that is Observable | SRG_WND_OBS_NOHEAL |                             |
| 11            | Dyspnea            | Dyspnea: Not short of breath   | response 0              | M1400      | When is the patient dyspneic or noticeably Short of Breath?  | DYSP0              | Excluded category           |
|               |                    | Dyspnea: Walking more than 20 feet, climbing stairs                      | response 1              | M1400      | When is the patient dyspneic or noticeably Short of Breath?  | DYSP1              |                             |
|               |                    | Dyspnea: Moderate exertion   | response 2              | M1400      | When is the patient dyspneic or noticeably Short of Breath?  | DYSP2              |                             |
|               |                    | Dyspnea: Minimal to no exertion  | response 3 or 4         | M1400      | When is the patient dyspneic or noticeably Short of Breath?  | DYSP34             |                             |
| 12            | Urinary Status     | Urinary incontinence/catheter: None                                      | response 0              | M1610      | Urinary Incontinence or Urinary Catheter Presence            | URINCONT_NONE      | Excluded category           |
|               |                    | Urinary incontinence/catheter: Incontinent                               | response 1              | M1610      | Urinary Incontinence or Urinary Catheter Presence            | URINCONT_INCONT    |                             |
|               |                    | Urinary incontinence/catheter: Catheter                                  | response 2              | M1610      | Urinary Incontinence or Urinary Catheter Presence            | URINCONT_CATH      |                             |
| 13            | Bowel Incontinence | Bowel Incontinence Frequency: Never or very rare                         | response 0 and UK       | M1620      | Bowel Incontinence Frequency                                 | BWL_NONE_UK        | Excluded category           |
|               |                    | Bowel Incontinence Frequency: Less than once a week                      | response 1              | M1620      | Bowel Incontinence Frequency                                 | BWL_FR1            |                             |
|               |                    | Bowel Incontinence Frequency: One to three times a week                  | response 2              | M1620      | Bowel Incontinence Frequency                                 | BWL_FR2            |                             |
|               |                    | Bowel Incontinence Frequency: Four to six times a week or more           | response 3, 4 or 5      | M1620      | Bowel Incontinence Frequency                                 | BWL_FR345          |                             |
|               |                    | Bowel Incontinence Frequency: Ostomy for bowel elimination               | NA                      | M1620      | Bowel Incontinence Frequency                                 | BWL_OSTOMY         |                             |



| Risk Factor # | Risk Factor            | Covariate  | Response Notes   | OASIS Item | OASIS Item Description                                       | Variable Name    | Excluded Category Indicator |
|---------------|------------------------|--|--|------------|--|------------------|-----------------------------|
| 14            | Cognitive function     | Cognitive Functioning: Alert and focused                           | response 0   | M1700      | Cognitive Functioning  | COGN0            | Excluded category           |
|               |                        | Cognitive Functioning: Requires prompting under stress             | response 1   | M1700      | Cognitive Functioning  | COGN1            |                             |
|               |                        | Cognitive Functioning: Requires assist in special circumstances    | response 2   | M1700      | Cognitive Functioning  | COGN2            |                             |
|               |                        | Cognitive Function: Requires considerable assist/totally dependent | response 3 or 4  | M1700      | Cognitive Functioning  | COGN34           |                             |
| 15            | Confusion              | Confused: never  | response 0 or NA   | M1710      | When Confused (Reported or Observed Within the Last 14 Days) | CONF0            | Excluded category           |
|               |                        | Confused: In new or complex situations                             | response 1   | M1710      | When Confused (Reported or Observed Within the Last 14 Days) | CONF1            |                             |
|               |                        | Confused: Sometimes  | response 2 or 3  | M1710      | When Confused (Reported or Observed Within the Last 14 Days) | CONF23           |                             |
|               |                        | Confused: Constantly   | response 4   | M1710      | When Confused (Reported or Observed Within the Last 14 Days) | CONF4            |                             |
| 16            | Anxiety                | Anxiety: None of the time  | response 0 or NA   | M1720      | When Anxious (Reported or Observed Within the Last 14 Days)  | ANX0             | Excluded category           |
|               |                        | Anxiety: Less often than daily                                     | response 1   | M1720      | When Anxious (Reported or Observed Within the Last 14 Days)  | ANX1             |                             |
|               |                        | Anxiety: Daily, but not constantly                                 | response 2   | M1720      | When Anxious (Reported or Observed Within the Last 14 Days)  | ANX2             |                             |
|               |                        | Anxiety: All of the time   | response 3   | M1720      | When Anxious (Reported or Observed Within the Last 14 Days)  | ANX3             |                             |
| 17            | Patient Mood Screening | PHQ-2 to 9: Does not meet criteria for further eval                | (D0150A2 response 0 or 1) and (D0150B2 response 0 or 1)  | D0150      | Patient Mood Interview (PHQ-2 to 9)                          | PHQ2_TO9_NOTMEET | Excluded category           |
|               |                        | PHQ-2 to 9: Meets criteria for further eval                        | (D0150A2 response 2 or 3) or (D0150B2 response 2 or 3)   | D0150      | Patient Mood Interview (PHQ-2 to 9)                          | PHQ2_TO9_MEET    |                             |
|               |                        | PHQ-2 to 9: No Patient Mood Screening                              | ((D0150A2 response "A") and ((D0150B2 response 0, 1, or "A"))) or (D0150B2 response "A" and (D0150A2 response 0, 1, or "A")) | D0150      | Patient Mood Interview (PHQ-2 to 9)                          | PHQ2_TO9_NA      |                             |

| Risk Factor # | Risk Factor                   | Covariate   | Response Notes        | OASIS Item | OASIS Item Description  | Variable Name     | Excluded Category Indicator |
|---------------|-------------------------------|---|-----------------------|------------|---|-------------------|-----------------------------|
| 18            | Behavioral Symptoms           | Behavioral: None  | response 7            | M1740      | Cognitive, behavioral, and psychiatric symptoms that are demonstrated at least once a week (Reported or Observed) | BEHAV_NONE        |                             |
|               |                               | Behavioral: Memory deficit  | response 1            | M1740      | Cognitive, behavioral, and psychiatric symptoms that are demonstrated at least once a week (Reported or Observed) | BEHAV_MEM_DEFICIT |                             |
|               |                               | Behavioral: Impaired decision making  | response 2            | M1740      | Cognitive, behavioral, and psychiatric symptoms that are demonstrated at least once a week (Reported or Observed) | BEHAV_IMPR_DECISN |                             |
|               |                               | Behavioral: Verbally disruptive, physical aggression, disruptive, or delusional | response 3, 4, 5 or 6 | M1740      | Cognitive, behavioral, and psychiatric symptoms that are demonstrated at least once a week (Reported or Observed) | BEHAV_OTHR        |                             |
| 19            | Disruptive Behavior Frequency | Frequency of Disruptive Behavior: Never   | response 0            | M1745      | Frequency of Disruptive Behavior Symptoms (Reported or Observed)  | BEHPFR0           | Excluded category           |
|               |                               | Frequency of Disruptive Behavior: Once a month or less                          | response 1 or 2       | M1745      | Frequency of Disruptive Behavior Symptoms (Reported or Observed)  | BEHPFR12          |                             |
|               |                               | Frequency of Disruptive Behavior: Several times a month                         | response 3            | M1745      | Frequency of Disruptive Behavior Symptoms (Reported or Observed)  | BEHPFR3           |                             |
|               |                               | Frequency of Disruptive Behavior: Several times a week                          | response 4            | M1745      | Frequency of Disruptive Behavior Symptoms (Reported or Observed)  | BEHPFR4           |                             |
|               |                               | Frequency of Disruptive Behavior: At least once daily                           | response 5            | M1745      | Frequency of Disruptive Behavior Symptoms (Reported or Observed)  | BEHPFR5           |                             |
| 20            | Grooming                      | Grooming: Able to groom self, unaided   | response 0            | M1800      | Grooming  | GROOM0            | Excluded category           |
|               |                               | Grooming: Grooming utensils must be placed within reach                         | response 1            | M1800      | Grooming  | GROOM1            |                             |
|               |                               | Grooming: Assistance needed   | response 2            | M1800      | Grooming  | GROOM2            |                             |
|               |                               | Grooming: Entirely dependent upon someone else                                  | response 3            | M1800      | Grooming  | GROOM3            |                             |
| 21            | Upper Body Dressing           | Ability to Dress Upper Body: No help needed                                     | response 0            | M1810      | Ability to Dress Upper Body   | UPPER0            | Excluded category           |
|               |                               | Ability to Dress Upper Body: Needs clothing laid out                            | response 1            | M1810      | Ability to Dress Upper Body   | UPPER1            |                             |
|               |                               | Ability to Dress Upper Body: Needs assistance putting on clothing               | response 2            | M1810      | Ability to Dress Upper Body   | UPPER2            |                             |
|               |                               | Ability to Dress Upper Body: Entirely dependent upon someone else               | response 3            | M1810      | Ability to Dress Upper Body   | UPPER3            |                             |

| Risk Factor # | Risk Factor         | Covariate   | Response Notes       | OASIS Item | OASIS Item Description   | Variable Name | Excluded Category Indicator |
|---------------|---------------------|---|----------------------|------------|--|---------------|-----------------------------|
| 22            | Lower Body Dressing | Ability to Dress Lower Body: No help needed                       | response 0           | M1820      | Ability to Dress Lower Body  | LOWER0        | Excluded category           |
|               |                     | Ability to Dress Lower Body: Needs clothing/shoes laid out        | response 1           | M1820      | Ability to Dress Lower Body  | LOWER1        |                             |
|               |                     | Ability to Dress Lower Body: Assist needed putting on clothing    | response 2           | M1820      | Ability to Dress Lower Body  | LOWER2        |                             |
|               |                     | Ability to Dress Lower Body: Entirely dependent upon someone else | response 3           | M1820      | Ability to Dress Lower Body  | LOWER3        |                             |
| 23            | Bathing             | Bathing: Independently in shower/tub                              | response 0           | M1830      | Bathing: Excludes grooming (washing face, washing hands, and shampooing hair). | BATH0         | Excluded category           |
|               |                     | Bathing: With the use of devices in shower/tub                    | response 1           | M1830      | Bathing: Excludes grooming (washing face, washing hands, and shampooing hair). | BATH1         |                             |
|               |                     | Bathing: With intermittent assistance in shower/tub               | response 2           | M1830      | Bathing: Excludes grooming (washing face, washing hands, and shampooing hair). | BATH2         |                             |
|               |                     | Bathing: Participates with supervision in shower/tub              | response 3           | M1830      | Bathing: Excludes grooming (washing face, washing hands, and shampooing hair). | BATH3         |                             |
|               |                     | Bathing: Independent at sink, in chair, or on commode             | response 4           | M1830      | Bathing: Excludes grooming (washing face, washing hands, and shampooing hair). | BATH4         |                             |
|               |                     | Bathing: Participates with assist at sink, in chair, or commode   | response 5           | M1830      | Bathing: Excludes grooming (washing face, washing hands, and shampooing hair). | BATH5         |                             |
| 24            | Toilet Transferring | Toilet Transferring: No assistance needed                         | response 0           | M1840      | Toilet Transferring  | TLTTRN0       | Excluded category           |
|               |                     | Toilet Transferring: To/from/on/off toilet with human assist      | response 1           | M1840      | Toilet Transferring  | TLTTRN1       |                             |
|               |                     | Toilet Transferring: Able to self-transfer to bedside commode     | response 2           | M1840      | Toilet Transferring  | TLTTRN2       |                             |
|               |                     | Toilet Transferring: Unable to transfer to/from toilet or commode | response 3 or 4      | M1840      | Toilet Transferring  | TLTTRN34      |                             |
| 25            | Toilet Hygiene      | Toilet Hygiene Assistance: None needed                            | response 0           | M1845      | Toileting Hygiene  | TLTHYG0       | Excluded category           |
|               |                     | Toilet Hygiene Assistance: Needs supplies laid out                | response 1           | M1845      | Toileting Hygiene  | TLTHYG1       |                             |
|               |                     | Toilet Hygiene Assistance: Needs assistance                       | response 2           | M1845      | Toileting Hygiene  | TLTHYG2       |                             |
|               |                     | Toilet Hygiene Assistance: Entirely dependent                     | response 3           | M1845      | Toileting Hygiene  | TLTHYG3       |                             |
| 26            | Transferring        | Transferring: No assistance needed                                | response 0           | M1850      | Transferring   | TRNFR0        | Excluded category           |
|               |                     | Transferring: With minimal human assist or with device            | response 1           | M1850      | Transferring   | TRNFR1        |                             |
|               |                     | Transferring: Bears weight and pivots only                        | response 2           | M1850      | Transferring   | TRNFR2        |                             |
|               |                     | Transferring: Unable or bedfast                                   | response 3 or 4 or 5 | M1850      | Transferring   | TRNFR345      |                             |

| Risk Factor # | Risk Factor                       | Covariate  | Response Notes  | OASIS Item   | OASIS Item Description  | Variable Name            | Excluded Category Indicator |
|---------------|-----------------------------------|--|---|--------------|---|--------------------------|-----------------------------|
| 27            | Ambulation                        | Ambulation/Locomotion: Walk independently                              | response 0  | M1860        | Ambulation/Locomotion   | AMB0                     | Excluded category           |
|               |                                   | Ambulation/Locomotion: One-handed device on all surfaces               | response 1  | M1860        | Ambulation/Locomotion   | AMB1                     |                             |
|               |                                   | Ambulation/Locomotion: Two-handed device/human assist on steps         | response 2  | M1860        | Ambulation/Locomotion   | AMB2                     |                             |
|               |                                   | Ambulation/Locomotion: Walks only with supervision or assist           | response 3  | M1860        | Ambulation/Locomotion   | AMB3                     |                             |
|               |                                   | Ambulation/Locomotion: Chairfast or bedfast                            | response 4 or 5 or 6  | M1860        | Ambulation/Locomotion   | AMB456                   |                             |
| 28            | Feeding or Eating                 | Eating: Independent  | response 0  | M1870        | Feeding or Eating   | EAT0                     | Excluded category           |
|               |                                   | Eating: Requires set up, intermittent assist or modified consistency   | response 1  | M1870        | Feeding or Eating   | EAT1                     |                             |
|               |                                   | Eating: Unable to feed self and must be assisted throughout meal       | response 2  | M1870        | Feeding or Eating   | EAT2                     |                             |
|               |                                   | Eating: Requires tube feedings, or no nutrients orally or via tube     | response 3 or 4 or 5  | M1870        | Feeding or Eating   | EAT345                   |                             |
| 29            | Oral Medication Management        | Management of Oral Meds: Independent                                   | response 0 or NA or missing   | M2020        | Management of Oral Medications: Excludes injectable and IV medications. | ORMED0                   | Excluded category           |
|               |                                   | Management of Oral Meds: Advance dose prep/chart needed                | response 1  | M2020        | Management of Oral Medications: Excludes injectable and IV medications. | ORMED1                   |                             |
|               |                                   | Management of Oral Meds: Reminders needed                              | response 2  | M2020        | Management of Oral Medications: Excludes injectable and IV medications. | ORMED2                   |                             |
|               |                                   | Management of Oral Meds: Unable  | response 3  | M2020        | Management of Oral Medications: Excludes injectable and IV medications. | ORMED3                   |                             |
| 30            | Supervision and Safety Assistance | None needed  | response 0  | M2102        | Types and Sources of Assistance   | SPRVSN_NONE_NEEDED       | Excluded category           |
|               |                                   | Caregiver currently provides   | response 1  | M2102        | Types and Sources of Assistance   | SPRVSN.CG_PROVIDES       |                             |
|               |                                   | Caregiver training needed  | response 2  | M2102        | Types and Sources of Assistance   | SPRVSN_NEED_TRAINING     |                             |
|               |                                   | Uncertain/unlikely to be provided                                      | response 3 or 4 or missing  | M2102        | Types and Sources of Assistance   | SPRVSN.CG_UNCERTAIN_NONE |                             |
| 31            | Hierarchical Condition Categories | HCC: HIV/AIDS  | 2023 HCCs were generated based on 2021 Model Software/ICD-10 Mappings. Future HCCs will be generated using software with a two-year lag. For example, 2024 HCCs will be generated based on 2022 software. | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses                     | HCC1                     |                             |
|               |                                   | HCC: Septicemia, sepsis, systemic inflammatory response syndrome/shock |   | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses                     | HCC2                     |                             |
|               |                                   | HCC: Opportunistic infections  |   | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses                     | HCC6                     |                             |
|               |                                   | HCC: Metastatic cancer and acute leukemia                              | Source:<br><a href="https://www.cms.gov/medicarehealth-plansmedicareadvtspecratestatsrisk-">https://www.cms.gov/medicarehealth-plansmedicareadvtspecratestatsrisk-</a>                                    | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses                     | HCC8                     |                             |
|               |                                   | HCC: Lung and other severe cancers                                     |   | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses                     | HCC9                     |                             |

| Risk Factor # | Risk Factor | Covariate  | Response Notes                               | OASIS Item   | OASIS Item Description                              | Variable Name | Excluded Category Indicator |
|---------------|-------------|--|--|--------------|---|---------------|-----------------------------|
|               |             | HCC: Lymphoma and other cancers                                      | adjustors/2021-model-softwareicd-10-mappings | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC10         |                             |
|               |             | HCC: Colorectal, bladder, and other cancers                          |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC11         |                             |
|               |             | HCC: Breast, prostate, and other cancers and tumors                  |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC12         |                             |
|               |             | HCC: Diabetes with acute complications                               |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC17         |                             |
|               |             | HCC: Diabetes with chronic complications                             |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC18         |                             |
|               |             | HCC: Diabetes without complication                                   |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC19         |                             |
|               |             | HCC: Protein-calorie malnutrition                                    |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC21         |                             |
|               |             | HCC: Morbid obesity  |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC22         |                             |
|               |             | HCC: Other significant endocrine and metabolic disorders             |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC23         |                             |
|               |             | HCC: End-stage liver disease   |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC27         |                             |
|               |             | HCC: Cirrhosis of liver  |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC28         |                             |
|               |             | HCC: Chronic hepatitis   |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC29         |                             |
|               |             | HCC: Intestinal obstruction/perforation                              |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC33         |                             |
|               |             | HCC: Chronic pancreatitis  |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC34         |                             |
|               |             | HCC: Inflammatory bowel disease                                      |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC35         |                             |
|               |             | HCC: Bone/joint/muscle infections/necrosis                           |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC39         |                             |
|               |             | HCC: Rheumatoid arthritis and inflammatory connective tissue disease |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC40         |                             |
|               |             | HCC: Severe hematological disorders                                  |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC46         |                             |
|               |             | HCC: Disorders of immunity   |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC47         |                             |
|               |             | HCC: Coagulation defects and other specified hematological disorders |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC48         |                             |
|               |             | HCC: Dementia with complications                                     |  | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC51         |                             |

| Risk Factor # | Risk Factor | Covariate  | Response Notes | OASIS Item   | OASIS Item Description                              | Variable Name | Excluded Category Indicator |
|---------------|-------------|--|----------------|--------------|---|---------------|-----------------------------|
|               |             | HCC: Dementia without complication   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC52         |                             |
|               |             | HCC: Substance use with psychotic complications  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC54         |                             |
|               |             | HCC: Substance use disorder, moderate/severe, or substance use with complications                        |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC55         |                             |
|               |             | HCC: Substance use disorder, mild, except alcohol and cannabis   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC56         |                             |
|               |             | HCC: Schizophrenia   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC57         |                             |
|               |             | HCC: Reactive and unspecified psychosis  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC58         |                             |
|               |             | HCC: Major depressive, bipolar, and paranoid disorders   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC59         |                             |
|               |             | HCC: Personality disorders   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC60         |                             |
|               |             | HCC: Quadriplegia  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC70         |                             |
|               |             | HCC: Paraplegia  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC71         |                             |
|               |             | HCC: Spinal cord disorders/injuries  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC72         |                             |
|               |             | HCC: Amyotrophic lateral sclerosis and other motor neuron disease  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC73         |                             |
|               |             | HCC: Cerebral palsy  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC74         |                             |
|               |             | HCC: Myasthenia gravis/myoneural disorders and Guillain-Barre syndrome/inflammatory and toxic neuropathy |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC75         |                             |
|               |             | HCC: Muscular dystrophy  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC76         |                             |
|               |             | HCC: Multiple sclerosis  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC77         |                             |
|               |             | HCC: Parkinson's and Huntington's diseases   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC78         |                             |
|               |             | HCC: Seizure disorders and convulsions   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC79         |                             |
|               |             | HCC: Coma, brain compression/anoxic damage   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC80         |                             |
|               |             | HCC: Respirator dependence/tracheostomy status   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC82         |                             |

| Risk Factor # | Risk Factor | Covariate   | Response Notes | OASIS Item   | OASIS Item Description                              | Variable Name | Excluded Category Indicator |
|---------------|-------------|---|----------------|--------------|---|---------------|-----------------------------|
|               |             | HCC: Respiratory arrest   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC83         |                             |
|               |             | HCC: Cardio-respiratory failure and shock                           |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC84         |                             |
|               |             | HCC: Congestive heart failure                                       |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC85         |                             |
|               |             | HCC: Acute myocardial infarction                                    |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC86         |                             |
|               |             | HCC: Unstable angina and other acute ischemic heart disease         |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC87         |                             |
|               |             | HCC: Angina pectoris  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC88         |                             |
|               |             | HCC: Specified heart arrhythmias                                    |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC96         |                             |
|               |             | HCC: Intracranial hemorrhage  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC99         |                             |
|               |             | HCC: Ischemic or unspecified stroke                                 |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC100        |                             |
|               |             | HCC: Hemiplegia/hemiparesis   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC103        |                             |
|               |             | HCC: Monoplegia, other paralytic syndromes                          |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC104        |                             |
|               |             | HCC: Atherosclerosis of the extremities with ulceration or gangrene |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC106        |                             |
|               |             | HCC: Vascular disease with complications                            |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC107        |                             |
|               |             | HCC: Vascular disease   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC108        |                             |
|               |             | HCC: Cystic fibrosis  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC110        |                             |
|               |             | HCC: Chronic obstructive pulmonary disease                          |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC111        |                             |
|               |             | HCC: Fibrosis of lung and other chronic lung disorders              |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC112        |                             |
|               |             | HCC: Aspiration and specified bacterial pneumonias                  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC114        |                             |
|               |             | HCC: Pneumococcal pneumonia, empyema, lung abscess                  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC115        |                             |
|               |             | HCC: Proliferative diabetic retinopathy and vitreous hemorrhage     |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC122        |                             |
|               |             | HCC: Exudative macular degeneration                                 |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC124        |                             |

| Risk Factor # | Risk Factor | Covariate  | Response Notes | OASIS Item   | OASIS Item Description                              | Variable Name | Excluded Category Indicator |
|---------------|-------------|--|----------------|--------------|---|---------------|-----------------------------|
|               |             | HCC: Dialysis status   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC134        |                             |
|               |             | HCC: Acute renal failure   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC135        |                             |
|               |             | HCC: Chronic kidney disease, stage 5   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC136        |                             |
|               |             | HCC: Chronic kidney disease, severe (stage 4)                                |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC137        |                             |
|               |             | HCC: Chronic kidney disease, moderate (stage 3)                              |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC138        |                             |
|               |             | HCC: Pressure ulcer of skin with necrosis through to muscle, tendon, or bone |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC157        |                             |
|               |             | HCC: Pressure ulcer of skin with full thickness skin loss                    |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC158        |                             |
|               |             | HCC: Pressure ulcer of skin with partial thickness skin loss                 |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC159        |                             |
|               |             | HCC: Chronic ulcer of skin, except pressure                                  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC161        |                             |
|               |             | HCC: Severe skin burn or condition   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC162        |                             |
|               |             | HCC: Severe head injury  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC166        |                             |
|               |             | HCC: Major head injury   |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC167        |                             |
|               |             | HCC: Vertebral fractures without spinal cord injury                          |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC169        |                             |
|               |             | HCC: Hip fracture/dislocation  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC170        |                             |
|               |             | HCC: Traumatic amputations and complications                                 |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC173        |                             |
|               |             | HCC: Complications of specified implanted device or graft                    |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC176        |                             |
|               |             | HCC: Major organ transplant or replacement status                            |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC186        |                             |
|               |             | HCC: Artificial openings for feeding or elimination                          |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC188        |                             |
|               |             | HCC: Amputation status, lower limb/amputation complications                  |                | M1021, M1023 | (M1021) Primary Diagnosis & (M1023) Other Diagnoses | HCC189        |                             |



**Table A-2. Summary of Number of Risk Factors and Model Fit Statistics**  
**Based on quality episodes starting and ending in CY 2021**

| Model                                       | Improvement in Ambulation/ Locomotion | Improvement in Bathing | Improvement in Bed Transferring | Improvement in Dyspnea | Improvement in Management of Oral Medications |
|---|---------------------------------------|------------------------|---------------------------------|------------------------|---|
| Number of Risk Factors by Model and Measure |                                       |                        |                                 |                        |   |
| Model Prior to CY 2023*                     | 112                                   | 112                    | 110                             | 96                     | 112   |
| Recalibrated Model, CY 2023 forward         | 135                                   | 127                    | 116                             | 112                    | 128   |
| C-Statistic by Model and Measure            |                                       |                        |                                 |                        |   |
| Model Prior to CY 2023*                     | 0.778                                 | 0.758                  | 0.790                           | 0.690                  | 0.787   |
| Recalibrated Model, CY 2023 forward         | 0.785                                 | 0.771                  | 0.809                           | 0.716                  | 0.814   |
| Pseudo-R2 Statistic by Model and Measure    |                                       |                        |                                 |                        |   |
| Model Prior to CY 2023*                     | 0.165                                 | 0.144                  | 0.188                           | 0.073                  | 0.190   |
| Recalibrated Model, CY 2023 forward         | 0.170                                 | 0.151                  | 0.204                           | 0.089                  | 0.214   |

\*Model developed in 2021.

Table A-3. Estimated Coefficients

Recalibrated model, effective CY 2023 using quality episodes ending CY 2021

| Risk Factor # | Risk Factor                          | Covariate # | Covariate Name    | Excluded Category Indicator | OASIS-Based Outcome Measure           |                        |                                 |                        |   |
|---------------|--------------------------------------|-------------|-------------------|-----------------------------|---------------------------------------|------------------------|---------------------------------|------------------------|---|
|               |                                      |             |                   |                             | Improvement in Ambulation/ Locomotion | Improvement in Bathing | Improvement in Bed Transferring | Improvement in Dyspnea | Improvement in Management of Oral Medications |
| 1             | Age                                  | 1           | AGE_0_54          |                             | -0.1456                               | -0.1063                | -0.0709                         | -0.0271                | -0.1029                                       |
|               |                                      | 2           | AGE_55_59         |                             | -0.1524                               | -0.1198                | -0.0997                         | -0.0980                | -0.0838                                       |
|               |                                      | 3           | AGE_60_64         |                             | -0.1468                               | -0.1312                | -0.1228                         | -0.1135                | -0.1133                                       |
|               |                                      | 4           | AGE_65_69         | Excluded category           |                                       |                        |                                 |                        |   |
|               |                                      | 5           | AGE_70_74         |                             | 0.0027                                | -0.0032                | 0.0177                          | 0.0246                 | -0.0388                                       |
|               |                                      | 6           | AGE_75_79         |                             | -0.0347                               | -0.0463                | -0.0106                         | -0.0045                | -0.1388                                       |
|               |                                      | 7           | AGE_80_84         |                             | -0.1197                               | -0.1330                | -0.0889                         | -0.0256                | -0.2890                                       |
|               |                                      | 8           | AGE_85_89         |                             | -0.2078                               | -0.2358                | -0.1781                         | -0.0494                | -0.4187                                       |
|               |                                      | 9           | AGE_90_94         |                             | -0.3494                               | -0.3947                | -0.3020                         | -0.1196                | -0.5769                                       |
|               |                                      | 10          | AGE_95PLUS        |                             | -0.5530                               | -0.6350                | -0.4972                         | -0.2309                | -0.7774                                       |
| 2             | Gender                               | 11          | GENDER_FEMALE     | Excluded category           |                                       |                        |                                 |                        |   |
|               |                                      | 12          | GENDER_MALE       |                             | 0.0541                                | 0.0624                 | 0.0425                          | -0.0342                | -0.0575                                       |
| 3             | Payment source                       | 13          | PAY_MCARE_FFS     | Excluded category           |                                       |                        |                                 |                        |   |
|               |                                      | 14          | PAY_MCARE_HMO     |                             | -0.0943                               | -0.0975                | -0.0537                         | -0.0074                | -0.0298                                       |
|               |                                      | 15          | PAY_MCAREANDMCAID |                             | -0.3388                               | -0.3844                | -0.2674                         | -0.1760                | -0.3633                                       |
|               |                                      | 16          | PAY_MCAID_ONLY    |                             | -0.1492                               | -0.2279                | -0.0932                         | -0.1128                | -0.1775                                       |
|               |                                      | 17          | PAY_OTHER_COMBO   |                             | -0.0129                               | -0.0099                | 0.1052                          | 0.1098                 | 0.0730  |
| 4             | SOC/ROC and Admission Source         | 18          | SOC_INPT          | Excluded category           |                                       |                        |                                 |                        |   |
|               |                                      | 19          | SOC_COMM          |                             | -0.4099                               | -0.3616                | -0.4107                         | -0.2979                | -0.3457                                       |
|               |                                      | 20          | ROC               |                             | -0.4025                               | -0.3934                | -0.4373                         | -0.3715                | -0.3801                                       |
| 5             | Post-acute facility admission source | 21          | INPT_POSTACUTE    |                             | -0.2154                               | -0.1538                | -0.1413                         | -0.0830                | -0.1567                                       |
|               |                                      | 22          | INPT_NOPOSTACUTE  | Excluded category           |                                       |                        |                                 |                        |   |

| Risk Factor # | Risk Factor                | Covariate # | Covariate Name      | Excluded Category Indicator | OASIS-Based Outcome Measure           |                        |                                 |                        |   |
|---------------|----------------------------|-------------|---------------------|-----------------------------|---------------------------------------|------------------------|---------------------------------|------------------------|---|
|               |                            |             |                     |                             | Improvement in Ambulation/ Locomotion | Improvement in Bathing | Improvement in Bed Transferring | Improvement in Dyspnea | Improvement in Management of Oral Medications |
| 6             | Risk of Hospitalization    | 23          | RISK_HSTRY_FALLS    |                             | -0.0572                               |                        |                                 |                        |   |
|               |                            | 24          | RISK_WEIGHTLOSS     |                             |                                       |                        |                                 |                        |   |
|               |                            | 25          | RISK_MLTPL_HOSPZTN  |                             | -0.0639                               | -0.0564                | -0.0495                         | -0.0992                | -0.0362                                       |
|               |                            | 26          | RISK_ED             |                             |                                       |                        |                                 |                        |   |
|               |                            | 27          | RISK_RCNT_DCLN      |                             | 0.0954                                | 0.1065                 | 0.1673                          | 0.0897                 | 0.0569  |
|               |                            | 28          | RISK_COMPLY         |                             | 0.0932                                | 0.1003                 |                                 |                        | 0.0938  |
|               |                            | 29          | RISK_5PLUS_MDCTN    |                             |                                       |                        |                                 | -0.0715                |   |
|               |                            | 30          | RISK_EXHAUST        |                             | 0.0828                                | 0.1071                 |                                 |                        | 0.1073  |
|               |                            | 31          | RISK_OTHR           |                             |                                       |                        |                                 |                        |   |
|               |                            | 32          | RISK_NONE           |                             | 0.2274                                | 0.2396                 | 0.2185                          | 0.2068                 | 0.2412  |
| 7             | Availability of Assistance | 33          | ASSIST_OCC_NONE     | Excluded category           |                                       |                        |                                 |                        |   |
|               |                            | 34          | ASSIST_REGNITE      |                             | -0.0507                               | -0.1076                | -0.0156                         | -0.0698                | -0.1161                                       |
|               |                            | 35          | ASSIST_REGDAY       |                             | -0.2123                               | -0.2527                | -0.2661                         | -0.1049                | -0.3156                                       |
|               |                            | 36          | ASSIST_ARND_CLOCK   |                             | -0.2313                               | -0.2625                | -0.2192                         | -0.1018                | -0.3955                                       |
|               | Living Arrangement         | 37          | LIV_ALONE           |                             | 0.1168                                | 0.1423                 | 0.1471                          |                        | 0.2822  |
|               |                            | 38          | LIV_OTHERS          | Excluded category           |                                       |                        |                                 |                        |   |
|               |                            | 39          | LIV_CONGREGATE      |                             | -0.1484                               | -0.0877                | -0.0291                         |                        | -0.7483                                       |
| 8             | Pressure Ulcers            | 40          | PU_NONE_STG1ONLY    | Excluded category           |                                       |                        |                                 |                        |   |
|               |                            | 41          | PU_STG2PLUS_UNSTG   |                             | -0.4092                               | -0.5331                | -0.4421                         | -0.3615                | -0.3643                                       |
| 9             | Stasis Ulcer               | 42          | STAS_ULCR_OBS_NONE  | Excluded category           |                                       |                        |                                 |                        |   |
|               |                            | 43          | STAS_ULCR_OBS_1     |                             | -0.0652                               | -0.1280                | -0.1751                         | -0.2211                | -0.0461                                       |
|               |                            | 44          | STAS_ULCR_OBS_2PLUS |                             | -0.2631                               | -0.3382                | -0.3025                         | -0.3887                | -0.1678                                       |
| 10            | Surgical Wound             | 45          | SRG_WND_OBS_NONE    | Excluded category           |                                       |                        |                                 |                        |   |
|               |                            | 46          | SRG_WND_OBS_EPI     |                             | 0.3275                                | 0.3605                 | 0.3280                          | 0.2260                 | 0.3663  |
|               |                            | 47          | SRG_WND_OBS_GRAN    |                             | 0.3175                                | 0.3258                 | 0.2772                          | 0.1467                 | 0.3123  |
|               |                            | 48          | SRG_WND_OBS_NOHEAL  |                             | 0.4799                                | 0.4503                 | 0.4805                          | 0.3374                 | 0.5213  |
| 11            | Dyspnea                    | 49          | DYSP0               | Excluded category           |                                       |                        |                                 |                        |   |
|               |                            | 50          | DYSP1               |                             | 0.2881                                | 0.2862                 | 0.2763                          |                        | 0.2828  |
|               |                            | 51          | DYSP2               |                             | 0.2484                                | 0.3144                 | 0.1580                          | 0.9754                 | 0.3647  |
|               |                            | 52          | DYSP34              |                             | 0.3735                                | 0.3893                 | 0.2829                          | 1.6353                 | 0.5681  |
| 12            | Urinary Status             | 53          | URINCONT_NONE       | Excluded category           |                                       |                        |                                 |                        |   |
|               |                            | 54          | URINCONT_INCONT     |                             | -0.2766                               | -0.2719                | -0.3118                         | -0.2332                | -0.2565                                       |
|               |                            | 55          | URINCONT_CATH       |                             | -0.5689                               | -0.5877                | -0.6072                         | -0.3626                | -0.4438                                       |

| Risk Factor # | Risk Factor                   | Covariate # | Covariate Name    | Excluded Category Indicator | OASIS-Based Outcome Measure           |                        |                                 |                        |   |
|---------------|-------------------------------|-------------|-------------------|-----------------------------|---------------------------------------|------------------------|---------------------------------|------------------------|---|
|               |                               |             |                   |                             | Improvement in Ambulation/ Locomotion | Improvement in Bathing | Improvement in Bed Transferring | Improvement in Dyspnea | Improvement in Management of Oral Medications |
| 13            | Bowel Incontinence            | 56          | BWL_NONE          | Excluded category           |                                       |                        |                                 |                        |   |
|               |                               | 57          | BWL_FR1           |                             | -0.1741                               | -0.1990                | -0.1618                         | -0.1078                | -0.1074                                       |
|               |                               | 58          | BWL_FR2           |                             | -0.3316                               | -0.3699                | -0.3477                         | -0.2217                | -0.2457                                       |
|               |                               | 59          | BWL_FR345         |                             | -0.5065                               | -0.5877                | -0.5966                         | -0.2900                | -0.4157                                       |
|               |                               | 60          | BWL_OSTOMY        |                             | -0.1300                               | -0.2597                | -0.1582                         | -0.0676                | -0.1078                                       |
| 14            | Cognitive function            | 61          | COGN0             | Excluded category           |                                       |                        |                                 |                        |   |
|               |                               | 62          | COGN1             |                             | -0.1181                               | -0.1476                | -0.1871                         | -0.0873                | -0.2778                                       |
|               |                               | 63          | COGN2             |                             | -0.1983                               | -0.2710                | -0.2308                         | -0.0939                | -0.4688                                       |
|               |                               | 64          | COGN34            |                             | -0.3252                               | -0.4478                | -0.3449                         | -0.0720                | -0.6760                                       |
| 15            | Confusion                     | 65          | CONF0             | Excluded category           |                                       |                        |                                 |                        |   |
|               |                               | 66          | CONF1             |                             | -0.1194                               | -0.1310                | -0.1325                         | -0.0977                | -0.2780                                       |
|               |                               | 67          | CONF23            |                             | -0.2141                               | -0.2406                | -0.2167                         | -0.0870                | -0.4988                                       |
|               |                               | 68          | CONF4             |                             | -0.4083                               | -0.4566                | -0.3521                         | -0.0153                | -0.8084                                       |
| 16            | Anxiety                       | 69          | ANX0              | Excluded category           |                                       |                        |                                 |                        |   |
|               |                               | 70          | ANX1              |                             | 0.0028                                | -0.0095                | -0.0127                         | -0.1187                | 0.0195  |
|               |                               | 71          | ANX2              |                             | 0.0401                                | 0.0213                 | 0.0326                          | -0.1241                | 0.0653  |
|               |                               | 72          | ANX3              |                             | 0.1534                                | 0.1350                 | 0.1702                          | -0.0400                | 0.1908  |
| 17            | Depression Screening          | 73          | PHQ2_TO9_NOTMEET  | Excluded category           |                                       |                        |                                 |                        |   |
|               |                               | 74          | PHQ2_TO9_MEET     |                             | -0.1260                               | -0.1624                | -0.1280                         | -0.1882                | -0.1207                                       |
|               |                               | 75          | PHQ2_TO9_NA       |                             | -0.2227                               | -0.2877                | -0.2476                         | -0.1272                | -0.2963                                       |
| 18            | Behavioral Symptoms           | 76          | BEHAV_NONE        |                             | 0.2240                                | 0.2687                 | 0.1888                          | 0.1323                 | 0.3637  |
|               |                               | 77          | BEHAV_MEM_DEFICIT |                             |                                       |                        |                                 |                        | -0.0842                                       |
|               |                               | 78          | BEHAV_IMPR_DECISN |                             | -0.0430                               |                        |                                 | -0.1139                |   |
|               |                               | 79          | BEHAV_OTHR        |                             | -0.2320                               | -0.2405                | -0.2283                         | -0.1781                | -0.2885                                       |
| 19            | Disruptive Behavior Frequency | 80          | BEHPFR0           | Excluded category           |                                       |                        |                                 |                        |   |
|               |                               | 81          | BEHPFR12          |                             | 0.2049                                | 0.2519                 | 0.1083                          | 0.1608                 | 0.2517  |
|               |                               | 82          | BEHPFR3           |                             | 0.1810                                | 0.1987                 | 0.1323                          | 0.1527                 | 0.2214  |
|               |                               | 83          | BEHPFR4           |                             | 0.1836                                | 0.1996                 | 0.1933                          | 0.2144                 | 0.2205  |
|               |                               | 84          | BEHPFR5           |                             | 0.1866                                | 0.2012                 | 0.2380                          | 0.2765                 | 0.1845  |
| 20            | Grooming                      | 85          | GROOM0            | Excluded category           |                                       |                        |                                 |                        |   |
|               |                               | 86          | GROOM1            |                             |                                       |                        |                                 |                        |   |
|               |                               | 87          | GROOM2            |                             |                                       |                        |                                 |                        |   |
|               |                               | 88          | GROOM3            |                             |                                       |                        |                                 |                        |   |

| Risk Factor # | Risk Factor         | Covariate # | Covariate Name | Excluded Category Indicator | OASIS-Based Outcome Measure           |                        |                                 |                        |   |
|---------------|---------------------|-------------|----------------|-----------------------------|---------------------------------------|------------------------|---------------------------------|------------------------|---|
|               |                     |             |                |                             | Improvement in Ambulation/ Locomotion | Improvement in Bathing | Improvement in Bed Transferring | Improvement in Dyspnea | Improvement in Management of Oral Medications |
| 21            | Upper Body Dressing | 89          | UPPER0         | Excluded category           |                                       |                        |                                 |                        |   |
|               |                     | 90          | UPPER1         |                             |                                       | 0.0711                 |                                 |                        | 0.0544  |
|               |                     | 91          | UPPER2         |                             |                                       | -0.1187                |                                 |                        | -0.1747                                       |
|               |                     | 92          | UPPER3         |                             |                                       | -0.2419                |                                 |                        | -0.4250                                       |
| 22            | Lower Body Dressing | 93          | LOWER0         | Excluded category           |                                       |                        |                                 |                        |   |
|               |                     | 94          | LOWER1         |                             | 0.2481                                | 0.1723                 |                                 |                        | 0.1643  |
|               |                     | 95          | LOWER2         |                             | 0.1469                                | 0.1050                 |                                 |                        | 0.1861  |
|               |                     | 96          | LOWER3         |                             | 0.1168                                | 0.0941                 |                                 |                        | 0.2389  |
| 23            | Bathing             | 97          | BATH0          | Excluded category           |                                       |                        |                                 |                        |   |
|               |                     | 98          | BATH1          |                             | -0.3104                               |                        |                                 | 0.0309                 |   |
|               |                     | 99          | BATH2          |                             | -0.2311                               | 1.0554                 |                                 | 0.0342                 |   |
|               |                     | 100         | BATH3          |                             | -0.3304                               | 1.8635                 |                                 | 0.0785                 |   |
|               |                     | 101         | BATH4          |                             | -0.2710                               | 2.3000                 |                                 | 0.1120                 |   |
|               |                     | 102         | BATH5          |                             | -0.1907                               | 2.8351                 |                                 | 0.3334                 |   |
|               |                     | 103         | BATH6          |                             | -0.5194                               | 3.0200                 |                                 | 0.0457                 |   |
| 24            | Toilet Transferring | 104         | TLTTRN0        | Excluded category           |                                       |                        |                                 |                        |   |
|               |                     | 105         | TLTTRN1        |                             | 0.2398                                | 0.2257                 | 0.1285                          | 0.1942                 | 0.1972  |
|               |                     | 106         | TLTTRN2        |                             | 0.1577                                | 0.2051                 | 0.0012                          | 0.1588                 | 0.2369  |
|               |                     | 107         | TLTTRN34       |                             | 0.2654                                | 0.2315                 | -0.0994                         | 0.1998                 | 0.3116  |
| 25            | Toilet Hygiene      | 108         | TLTHYG0        | Excluded category           |                                       |                        |                                 |                        |   |
|               |                     | 109         | TLTHYG1        |                             | 0.0035                                | -0.0244                | -0.0612                         |                        | 0.0022  |
|               |                     | 110         | TLTHYG2        |                             | -0.2067                               | -0.1383                | -0.3749                         |                        | -0.1159                                       |
|               |                     | 111         | TLTHYG3        |                             | -0.4120                               | -0.3989                | -0.7458                         |                        | -0.3828                                       |
| 26            | Transferring        | 112         | TRNFR0         | Excluded category           |                                       |                        |                                 |                        |   |
|               |                     | 113         | TRNFR1         |                             | -0.2762                               | -0.0967                |                                 | 0.0192                 | 0.0664  |
|               |                     | 114         | TRNFR2         |                             | -0.0846                               | 0.1528                 | 2.2364                          | 0.3004                 | 0.3712  |
|               |                     | 115         | TRNFR345       |                             | -0.1754                               | 0.0153                 | 2.8715                          | 0.2712                 | 0.3171  |
| 27            | Ambulation          | 116         | AMB0           | Excluded category           |                                       |                        |                                 |                        |   |
|               |                     | 117         | AMB1           |                             |                                       | -0.2624                | -0.5265                         | -0.1522                | -0.0372                                       |
|               |                     | 118         | AMB2           |                             | 0.1031                                | -0.5863                | -0.9988                         | -0.2658                | -0.1952                                       |
|               |                     | 119         | AMB3           |                             | 1.9729                                | -0.2801                | -0.5887                         | -0.0021                | 0.1436  |
|               |                     | 120         | AMB456         |                             | 1.4478                                | -1.1906                | -1.6254                         | -0.4108                | -0.4173                                       |

| Risk Factor # | Risk Factor                       | Covariate # | Covariate Name           | Excluded Category Indicator | OASIS-Based Outcome Measure           |                        |                                 |                        |   |
|---------------|-----------------------------------|-------------|--------------------------|-----------------------------|---------------------------------------|------------------------|---------------------------------|------------------------|---|
|               |                                   |             |                          |                             | Improvement in Ambulation/ Locomotion | Improvement in Bathing | Improvement in Bed Transferring | Improvement in Dyspnea | Improvement in Management of Oral Medications |
| 28            | Feeding or Eating                 | 121         | EAT0                     | Excluded category           |                                       |                        |                                 |                        |   |
|               |                                   | 122         | EAT1                     |                             | -0.0361                               | -0.0428                | -0.1678                         |                        | -0.0439                                       |
|               |                                   | 123         | EAT2                     |                             | -0.1059                               | -0.1659                | -0.3406                         |                        | -0.2160                                       |
|               |                                   | 124         | EAT345                   |                             | -0.2458                               | -0.5826                | -0.5647                         |                        | -0.5694                                       |
| 29            | Oral Medication Management        | 125         | ORMED0                   | Excluded category           |                                       |                        |                                 |                        |   |
|               |                                   | 126         | ORMED1                   |                             | 0.1451                                |                        | 0.0481                          | 0.1133                 |   |
|               |                                   | 127         | ORMED2                   |                             | 0.3199                                |                        | 0.0854                          | 0.2211                 | 1.2634  |
|               |                                   | 128         | ORMED3                   |                             | 0.3822                                |                        | 0.3121                          | 0.3987                 | 1.6797  |
| 30            | Supervision and Safety Assistance | 129         | SPRVSN_NONE_NEEDED       | Excluded category           |                                       |                        |                                 |                        |   |
|               |                                   | 130         | SPRVSN_CG_PROVIDES       |                             | -0.1582                               | -0.1896                | -0.1882                         | -0.0892                | -0.3029                                       |
|               |                                   | 131         | SPRVSN_NEED_TRAINING     |                             | -0.0290                               | -0.0066                | -0.1006                         | 0.0020                 | -0.1098                                       |
|               |                                   | 132         | SPRVSN_CG_UNCERTAIN_NONE |                             | -0.1936                               | -0.1842                | -0.2426                         | -0.2171                | -0.1326                                       |
| 31            | Hierarchical Condition Categories | 133         | hcc1                     |                             |                                       |                        |                                 |                        |   |
|               |                                   | 134         | hcc2                     |                             |                                       |                        |                                 |                        |   |
|               |                                   | 135         | hcc6                     |                             |                                       |                        |                                 |                        |   |
|               |                                   | 136         | hcc8                     |                             | -0.6926                               | -0.7576                | -0.6812                         | -0.7416                | -0.6601                                       |
|               |                                   | 137         | hcc9                     |                             | -0.3042                               | -0.3821                | -0.3100                         | -0.5132                | -0.3503                                       |
|               |                                   | 138         | hcc10                    |                             | -0.2249                               | -0.2263                | -0.2188                         | -0.2383                | -0.2504                                       |
|               |                                   | 139         | hcc11                    |                             |                                       |                        |                                 | -0.1548                |   |
|               |                                   | 140         | hcc12                    |                             |                                       |                        |                                 | -0.0896                |   |
|               |                                   | 141         | hcc17                    |                             |                                       |                        |                                 |                        |   |
|               |                                   | 142         | hcc18                    |                             | -0.1341                               | -0.1027                | -0.1468                         | -0.1533                | -0.1249                                       |
|               |                                   | 143         | hcc19                    |                             |                                       |                        |                                 |                        |   |
|               |                                   | 144         | hcc21                    |                             | -0.1527                               | -0.1790                | -0.1237                         | -0.1561                | -0.2112                                       |
|               |                                   | 145         | hcc22                    |                             | -0.2609                               | -0.3291                | -0.2272                         | -0.3539                |   |
|               |                                   | 146         | hcc23                    |                             |                                       |                        |                                 |                        |   |
|               |                                   | 147         | hcc27                    |                             | -0.2840                               | -0.3354                | -0.3111                         | -0.3603                | -0.3962                                       |
|               |                                   | 148         | hcc28                    |                             | -0.2068                               | -0.2181                | -0.1808                         | -0.2448                | -0.2921                                       |
|               |                                   | 149         | hcc29                    |                             |                                       |                        |                                 |                        |   |
|               |                                   | 150         | hcc33                    |                             |                                       |                        |                                 |                        |   |
|               |                                   | 151         | hcc34                    |                             |                                       |                        |                                 |                        |   |
|               |                                   | 152         | hcc35                    |                             | 0.2278                                | 0.1976                 | 0.2034                          |                        |   |
|               |                                   | 153         | hcc39                    |                             | -0.1146                               | -0.1078                | -0.1104                         |                        |   |
|               |                                   | 154         | hcc40                    |                             |                                       |                        |                                 |                        |   |
|               |                                   | 155         | hcc46                    |                             | -0.1946                               |                        |                                 | -0.1868                |   |

| Risk Factor # | Risk Factor | Covariate # | Covariate Name | Excluded Category Indicator | OASIS-Based Outcome Measure           |                        |                                 |                        |   |
|---------------|-------------|-------------|----------------|-----------------------------|---------------------------------------|------------------------|---------------------------------|------------------------|---|
|               |             |             |                |                             | Improvement in Ambulation/ Locomotion | Improvement in Bathing | Improvement in Bed Transferring | Improvement in Dyspnea | Improvement in Management of Oral Medications |
|               |             | 156         | hcc47          |                             |                                       |                        |                                 |                        |   |
|               |             | 157         | hcc48          |                             |                                       |                        |                                 |                        |   |
|               |             | 158         | hcc51          |                             | -0.3334                               | -0.3475                | -0.2205                         |                        | -0.5627                                       |
|               |             | 159         | hcc52          |                             | -0.2140                               | -0.2425                | -0.1292                         | 0.0740                 | -0.4916                                       |
|               |             | 160         | hcc54          |                             |                                       |                        |                                 |                        | -0.2793                                       |
|               |             | 161         | hcc55          |                             |                                       |                        |                                 |                        |   |
|               |             | 162         | hcc56          |                             |                                       |                        |                                 |                        |   |
|               |             | 163         | hcc57          |                             |                                       |                        |                                 |                        | -0.4456                                       |
|               |             | 164         | hcc58          |                             |                                       |                        |                                 |                        |   |
|               |             | 165         | hcc59          |                             |                                       |                        | -0.0884                         | -0.0641                | -0.1214                                       |
|               |             | 166         | hcc60          |                             |                                       |                        |                                 |                        | -0.5231                                       |
|               |             | 167         | hcc70          |                             | -1.0791                               | -1.1827                | -1.2492                         |                        | -0.9412                                       |
|               |             | 168         | hcc71          |                             | -1.2517                               | -0.4245                | -0.7906                         |                        | -0.1706                                       |
|               |             | 169         | hcc72          |                             | -0.6073                               | -0.2782                | -0.3501                         |                        | -0.1680                                       |
|               |             | 170         | hcc73          |                             | -1.6164                               | -1.5456                | -1.5024                         | -1.1146                | -1.4899                                       |
|               |             | 171         | hcc74          |                             | -0.9118                               | -0.7945                | -0.8181                         |                        | -0.7450                                       |
|               |             | 172         | hcc75          |                             | -0.1998                               | -0.1440                | -0.1571                         | -0.1473                |   |
|               |             | 173         | hcc76          |                             | -1.1144                               | -0.8187                | -1.1053                         | -0.3647                | -0.6423                                       |
|               |             | 174         | hcc77          |                             | -0.7089                               | -0.4841                | -0.6226                         |                        | -0.3269                                       |
|               |             | 175         | hcc78          |                             | -0.4362                               | -0.3724                | -0.3307                         | -0.0508                | -0.3889                                       |
|               |             | 176         | hcc79          |                             | -0.1529                               | -0.1597                | -0.1281                         |                        | -0.2552                                       |
|               |             | 177         | hcc80          |                             | -0.2845                               | -0.3132                |                                 |                        | -0.4614                                       |
|               |             | 178         | hcc82          |                             |                                       | -0.4302                |                                 | -0.6123                | -0.4519                                       |
|               |             | 179         | hcc83          |                             |                                       |                        |                                 |                        |   |
|               |             | 180         | hcc84          |                             |                                       | -0.0655                |                                 | -0.3892                | -0.0782                                       |
|               |             | 181         | hcc85          |                             | -0.1761                               | -0.1912                | -0.1806                         | -0.2845                | -0.1683                                       |
|               |             | 182         | hcc86          |                             |                                       |                        |                                 | -0.0727                |   |
|               |             | 183         | hcc87          |                             |                                       |                        |                                 |                        |   |
|               |             | 184         | hcc88          |                             |                                       |                        |                                 | -0.1100                |   |
|               |             | 185         | hcc96          |                             |                                       |                        |                                 |                        |   |
|               |             | 186         | hcc99          |                             |                                       |                        |                                 |                        |   |
|               |             | 187         | hcc100         |                             | -0.4052                               | -0.4270                | -0.4065                         | -0.3411                | -0.3891                                       |
|               |             | 188         | hcc103         |                             | -0.4304                               | -0.3310                | -0.3320                         |                        | -0.4054                                       |
|               |             | 189         | hcc104         |                             | -0.1988                               |                        |                                 |                        | -0.1673                                       |
|               |             | 190         | hcc106         |                             | -0.6090                               | -0.5298                | -0.5617                         | -0.3773                | -0.3128                                       |

| Risk Factor # | Risk Factor | Covariate # | Covariate Name | Excluded Category Indicator | OASIS-Based Outcome Measure           |                        |                                 |                        |   |
|---------------|-------------|-------------|----------------|-----------------------------|---------------------------------------|------------------------|---------------------------------|------------------------|---|
|               |             |             |                |                             | Improvement in Ambulation/ Locomotion | Improvement in Bathing | Improvement in Bed Transferring | Improvement in Dyspnea | Improvement in Management of Oral Medications |
|               |             | 191         | hcc107         |                             |                                       |                        |                                 | -0.0778                |   |
|               |             | 192         | hcc108         |                             | -0.1139                               |                        |                                 |                        |   |
|               |             | 193         | hcc110         |                             |                                       |                        |                                 |                        |   |
|               |             | 194         | hcc111         |                             | -0.1551                               | -0.1580                | -0.1317                         | -0.4785                | -0.1289                                       |
|               |             | 195         | hcc112         |                             | -0.1177                               |                        |                                 | -0.5441                | -0.1223                                       |
|               |             | 196         | hcc114         |                             | -0.1538                               | -0.1586                | -0.1344                         |                        | -0.2868                                       |
|               |             | 197         | hcc115         |                             |                                       |                        |                                 |                        |   |
|               |             | 198         | hcc122         |                             |                                       |                        |                                 |                        |   |
|               |             | 199         | hcc124         |                             |                                       |                        |                                 |                        |   |
|               |             | 200         | hcc134         |                             | -0.7258                               | -0.6931                | -0.7056                         | -0.5043                | -0.6666                                       |
|               |             | 201         | hcc135         |                             |                                       |                        |                                 | -0.0770                |   |
|               |             | 202         | hcc136         |                             | -0.5036                               | -0.4766                | -0.4506                         | -0.2851                | -0.4583                                       |
|               |             | 203         | hcc137         |                             | -0.0805                               | -0.1050                | -0.1009                         | -0.1097                | -0.0716                                       |
|               |             | 204         | hcc138         |                             |                                       |                        |                                 |                        |   |
|               |             | 205         | hcc157         |                             | -0.6076                               | -0.4686                | -0.6929                         | -0.3237                | -0.3355                                       |
|               |             | 206         | hcc158         |                             | -0.2622                               | -0.1793                | -0.3303                         |                        | -0.1070                                       |
|               |             | 207         | hcc159         |                             | -0.1399                               |                        | -0.1601                         |                        |   |
|               |             | 208         | hcc161         |                             | -0.3095                               | -0.3639                | -0.3576                         | -0.3122                | -0.1465                                       |
|               |             | 209         | hcc162         |                             |                                       |                        |                                 |                        |   |
|               |             | 210         | hcc166         |                             |                                       |                        |                                 |                        |   |
|               |             | 211         | hcc167         |                             |                                       |                        |                                 |                        | -0.2139                                       |
|               |             | 212         | hcc169         |                             |                                       |                        |                                 |                        |   |
|               |             | 213         | hcc170         |                             | -0.2435                               |                        |                                 |                        |   |
|               |             | 214         | hcc173         |                             | -0.6830                               |                        |                                 |                        |   |
|               |             | 215         | hcc176         |                             |                                       |                        |                                 |                        |   |
|               |             | 216         | hcc186         |                             | 0.3043                                |                        | 0.3267                          |                        |   |
|               |             | 217         | hcc188         |                             |                                       |                        |                                 |                        |   |
|               |             | 218         | hcc189         |                             | -1.0179                               | -0.3925                | -0.4743                         | -0.1797                | -0.2396                                       |
| 32            | CONSTANT    | 219         | _CONS          |                             | 0.9281                                | 0.9135                 | 2.0258                          | 1.2072                 | 0.9086  |