

# Risk Adjustment Technical Steps and Risk Factor Specifications

Effective January 1, 2023

Last Updated: March 30, 2024

## I. Background

The Centers for Medicare & Medicaid Services (CMS) maintains, re-evaluates and implements changes to the OASIS data item set and develops, implements, maintains and re-evaluates quality measures that are reflective of quality of care provided by home health agencies (HHAs) in the home setting.

For outcome measures, the re-evaluation process includes evaluating and updating, as needed, the risk adjustment models used to adjust for patient characteristics at admission, to ensure they are adequately robust and allow for valid comparison across providers. OASIS-based home health outcome measures are risk adjusted using OASIS items that are statistically significant and clinically relevant predictors of the outcome.

This document has been updated from the version effective January 1, 2023, to add:

- 1) risk models for the new Discharge Function Score quality measure, and
- 2) definitions for risk adjustment terms found in this document.

**Note that the risk models, including covariates and coefficients, for the measures other than the new Discharge Function Score measure remain unchanged from the January 1, 2023 version of this document.**

There are two sets of risk models described in this document. One set updates the prior risk adjustment models after revising the following risk factors to accommodate changes in OASIS-E:

- Depression Screening (PHQ-2 Score) was replaced with Patient Mood Screening (PHQ-2 to 9)
- Home Care Diagnoses were replaced with CMS-Hierarchical Condition Categories (CMS-HCCs)

All other risk factors remain the same as the January 1, 2021 update.

The latest risk adjustment update is applicable to home health quality episodes with a start of care/resumption care assessment completion date (M0090\_ASMT\_CMPLT\_DT) on or after begin January 1, 2023. The OASIS-based outcome measures for which the updated risk adjustment models apply starting January 1, 2023 are:

- Improvement in Ambulation/Locomotion
- Improvement in Bathing
- Improvement in Bed Transferring
- Improvement in Bowel Incontinence
- Improvement in Confusion Frequency
- Improvement in Dyspnea
- Improvement in Lower Body Dressing
- Improvement in Upper Body Dressing
- Improvement in Management of Oral Medications
- Improvement in Toilet Transferring
- Discharged to Community

The next major update of these risk adjustment models is planned to take effect in CY 2025. During that update, the risk adjustment models will be based on refreshed data, and all risk factors will be re-tested for inclusion.

The second set describes the risk factors for Discharge Function Score (DC Function), which will first be reported in April 2024. For more details on how DC Function is calculated, consult the Discharge Function Score for Home Health (HH) Technical Report dated March 2024 and available in the download section at <https://www.cms.gov/medicare/quality/home-health/home-health-quality-measures>. The next major update to the risk adjustment model for DC Function is planned for CY 2026. During that update, the risk adjustment and imputation models will be based on refreshed data, and all risk factors will be re-tested for inclusion.

**Section II** describes the technical steps for calculating risk adjusted measures and describes the development of the risk adjustment models.

**Section III** contains the detailed specifications for each of the risk factors used in the risk adjustment models.

**Section IV** contains the detailed specifications for each of the risk factors used in the DC Function models, but not for the other OASIS-based outcome measures.

**Appendix Table 1** and **Appendix Table 2** contains the list of risk factors and the estimated covariate coefficients for each measure, respectively. **Because DC Function uses a different risk adjustment model and also requires imputation, the risk adjustment and imputation covariate coefficients for DC Function are located in the downloads section at <https://www.cms.gov/medicare/quality/home-health/home-health-quality-measures>**

## Definitions

**Hierarchical Condition Categories (HCCs)** - HCCs are used in the OASIS-based quality measure risk models to reflect patient conditions/diagnoses. HCCs are obtained by mapping the ICD-10-CM diagnoses codes from OASIS items M1021 and M1023. CMS releases midyear final mappings for ICD-10-CM to HCCs every year. The mid-year final version of the HCCs is used in the HHQRP risk models. The HCC mappings in the OASIS-based quality measure risk models are updated each year in the fall, after the mid-year final mapping has been released.

**Home Health Quality Reporting Program Measure Calculations and Reporting User's Manual (a.k.a. QM User's Manual)** – The Home Health Quality Reporting Program (HH QRP) manual that includes the measure specifications, risk models, and report information for all quality measures included in the HHQRP. An update to the manual is triggered when any significant additions or updates occur to any quality measures included in the HH QRP. A significant update would include the addition of a measure, the re-specification of a measure, or an update to the risk adjustment technical specifications.

**Risk (Adjustment) Model** – The measure-specific model used to risk adjust a measure. Each risk-adjusted measure has its own unique risk model.

**Risk (Adjustment) Model Update** – Any update to an individual measure's publicly documented risk model. This could include the addition or removal of a risk factor, updates to coefficients, or any re-calibration of the model. A risk model is considered "updated" whenever publicly available

documentation is required to be revised, in response to measure maintenance/reevaluation. **NOTE:** Updated mapping of HCCs alone (without a change to any coefficients in the model) is not considered a risk model “update”).

## II. Technical Approach

### Calculating Risk Adjusted Quality Measures

The following steps are used to calculate each quality measure:

A. Calculate the agency observed score **(steps 1 through 3)**

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

Calculate the total number of quality episodes that do not meet the exclusion criteria following each measure's specifications.<sup>1</sup>

**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.

**Step 3.** Calculate the agency's 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 (technical specifications for risk factors are in [Section III](#)):

If dichotomous risk factors are used, assign values, either '0' for condition not present or '1' for 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:

[1] 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] Quality measure triggered (yes=1, no=0) =  $B_0 + B_1 * COV_1 + B_2 * COV_2 + \dots B_N * COV_N$

Where  $B_0$  is the logistic regression constant,  $B_1$  is the logistic regression coefficient for the first covariate,  $COV_1$  is the episode-level rate for the first covariate,  $B_2$  is the logistic regression coefficient for the second covariate, and  $COV_2$  is the episode-level rate for the second covariate, etc. The regression constant and regression coefficients are provided in [Appendix Table 2](#).

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<sup>1</sup> Measure specifications are available in the Downloads section of the Home Health Quality Measures website: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HomeHealthQualityInits/Home-Health-Quality-Measures.html>

C. Calculate the agency 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 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 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%, the adjusted rate is set to 100%. Similarly, if the result is a negative number, the adjusted rate is set to zero.

## Identifying Risk Factors

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

1. Risk factors were identified based on OASIS items that will remain following the OASIS-E transition. 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 risk factor groups (e.g., functional status, CMS-HCCs). 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 kept for further review.

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 factors 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 probability  $<0.0001$  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 are statistically significant at  $<0.0001$ , the entire content focus group is removed from the model.
4. A logistic regression was computed on the list of risk factors that had achieved probability  $<0.0001$  in Step 3 above.
5. Goodness of fit 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.
9. Updated for January 1, 2023 as outlined in **Section I**: Risk adjustment models were re-run after revising two risk factors (i.e., replacing depression screening with patient mood screening and home care diagnoses with HCCs).

### III. Risk Factor Technical Specifications

OASIS data items are referred to in this documentation using field names specified in OASIS Data Submission Specifications published by CMS. "[1]" is appended to the field name if the value is taken from the beginning of episode assessment (Start or Resumption of Care), and "[2]" is appended if the value is to be taken from the assessment conducted at the end of the episode (Discharge, Transfer, or Death).

#### 1. Age

```
IF M0100_ASSMT_REASON[1] = 01
THEN
  IF MONTH(M0030_START_CARE_DT[1]) > MONTH(M0066_PAT_BIRTH_DT[1]) OR
  (MONTH(M0030_START_CARE_DT[1]) = MONTH(M0066_PAT_BIRTH_DT[1])
  AND DAY(M0030_START_CARE_DT[1]) >= DAY(M0066_PAT_BIRTH_DT[1]))
  THEN
    AGE = YEAR(M0030_START_CARE_DT[1]) – YEAR(M0066_PAT_BIRTH_DT[1])
  ELSE
    AGE = YEAR(M0030_START_CARE_DT[1]) – YEAR(M0066_PAT_BIRTH_DT[1])-1
  END IF
ELSE
  IF MONTH(M0032_ROC_DT[1]) > MONTH(M0066_PAT_BIRTH_DT[1])OR
  (MONTH(M0032_ROC_DT[1]) = MONTH(M0066_PAT_BIRTH_DT[1]) AND
  DAY(M0032_ROC_DT[1]) >= DAY(M0066_PAT_BIRTH_DT[1]))
  THEN
    AGE = YEAR(M0032_ROC_DT[1]) – YEAR(M0066_PAT_BIRTH_DT[1])
  ELSE
    AGE = YEAR(M0032_ROC_DT[1]) – YEAR(M0066_PAT_BIRTH_DT[1])-1
  END IF
END IF
```

#### Age: 0-54

```
IF (AGE >= 18 AND AGE <= 54)
THEN
  AGE_0_54 = 1
ELSE
  AGE_0_54 = 0
END IF
```

#### Age: 55-59

```
IF (AGE >= 55 AND AGE <= 59)
THEN
  AGE_55_59 = 1
ELSE
  AGE_55_59 = 0
END IF
```

Age: 60-64

```
IF (AGE >= 60 AND AGE <= 64)
THEN
    AGE_60_64 = 1
ELSE
    AGE_60_64 = 0
END IF
```

Age: 65-69

```
IF (AGE >= 65 AND AGE <= 69)
THEN
    AGE_65_69 = 1
ELSE
    AGE_65_69 = 0
END IF
```

Age: 70-74

```
IF (AGE >= 70 AND AGE <= 74)
THEN
    AGE_70_74 = 1
ELSE
    AGE_70_74 = 0
END IF
```

Age: 75-79

```
IF (AGE >= 75 AND AGE <= 79)
THEN
    AGE_75_79 = 1
ELSE
    AGE_75_79 = 0
END IF
```

Age: 80-84

```
IF (AGE >= 80 AND AGE <= 84)
THEN
    AGE_80_84 = 1
ELSE
    AGE_80_84 = 0
END IF
```

Age: 85-89

```
IF (AGE >= 85 AND AGE <= 89)
THEN
    AGE_85_89 = 1
ELSE
    AGE_85_89 = 0
END IF
```



Age: 90-94

```
IF (AGE >= 90 AND AGE <= 94)
THEN
    AGE_90_94 = 1
ELSE
    AGE_90_94 = 0
END IF
```

Age: 95+

```
IF (AGE >= 95)
THEN
    AGE_95PLUS = 1
ELSE
    AGE_95PLUS = 0
END IF
```

## 2. Gender

```
IF M0069_PAT_GENDER[1] = 2
THEN
    GENDER = 1
ELSE
    GENDER = 0
END IF
```

Patient is Female

```
IF GENDER = 1
THEN
    GENDER_FEMALE = 1
ELSE
    GENDER_FEMALE = 0
END IF
```

Patient is Male

```
IF GENDER = 0
THEN
    GENDER_MALE = 1
ELSE
    GENDER_MALE = 0
END IF
```

## 3. Payment Source

Payment Source: Medicare FFS only

```
IF M0150_CPAY_MCARE_FFS[1] = 1 AND M0150_CPAY_NONE[1] = 0 AND
M0150_CPAY_MCARE_HMO[1] = 0 AND M0150_CPAY_MCAID_FFS[1] = 0 AND
M0150_CPAY_MCAID_HMO[1] = 0 AND M0150_CPAY_WRKCOMP[1] = 0 AND
```

M0150\_CPAY\_TITLEPGMS[1] = 0 AND M0150\_CPAY\_OTH\_GOVT[1] = 0 AND  
M0150\_CPAY\_PRIV\_INS[1] = 0 AND M0150\_CPAY\_PRIV\_HMO[1] = 0 AND  
M0150\_CPAY\_SELFPAY[1] = 0 AND M0150\_CPAY\_OTHER[1] = 0 AND M0150\_CPAY\_UK [1] = 0  
**THEN**  
    PAY\_MCARE\_FFS = 1  
**ELSE**  
    PAY\_MCARE\_FFS = 0  
**END IF**

Payment Source: Medicare HMO only

**IF** M0150\_CPAY\_MCARE\_HMO[1] = 1 AND M0150\_CPAY\_NONE[1] = 0 AND  
M0150\_CPAY\_MCARE\_FFS[1] = 0 AND M0150\_CPAY\_MCAID\_FFS[1] = 0 AND  
M0150\_CPAY\_MCAID\_HMO[1] = 0 AND M0150\_CPAY\_WRKCOMP[1] = 0 AND  
M0150\_CPAY\_TITLEPGMS[1] = 0 AND M0150\_CPAY\_OTH\_GOVT[1] = 0 AND  
M0150\_CPAY\_PRIV\_INS[1] = 0 AND M0150\_CPAY\_PRIV\_HMO[1] = 0 AND  
M0150\_CPAY\_SELFPAY[1] = 0 AND M0150\_CPAY\_OTHER[1] = 0 AND M0150\_CPAY\_UK[1] = 0  
**THEN**  
    PAY\_MCARE\_HMO = 1  
**ELSE**  
    PAY\_MCARE\_HMO = 0  
**END IF**

Payment Source: Medicare and Medicaid

**IF** ((M0150\_CPAY\_MCARE\_FFS[1] = 1 AND M0150\_CPAY\_MCAID\_FFS[1] = 1) OR  
(M0150\_CPAY\_MCARE\_FFS[1] = 1 AND M0150\_CPAY\_MCAID\_HMO[1] = 1) OR  
(M0150\_CPAY\_MCARE\_HMO[1] = 1 AND M0150\_CPAY\_MCAID\_FFS[1] = 1) OR  
(M0150\_CPAY\_MCARE\_HMO[1] = 1 AND M0150\_CPAY\_MCAID\_HMO[1] = 1) OR  
(M0150\_CPAY\_MCARE\_FFS[1] = 1 AND M0150\_CPAY\_MCARE\_HMO[1] = 1 AND  
M0150\_CPAY\_MCAID\_FFS[1] = 1) OR (M0150\_CPAY\_MCARE\_FFS[1] = 1 AND  
M0150\_CPAY\_MCARE\_HMO[1] = 1 AND M0150\_CPAY\_MCAID\_HMO[1] = 1) OR  
(M0150\_CPAY\_MCARE\_FFS[1] = 1 AND M0150\_CPAY\_MCAID\_FFS[1] = 1 AND  
M0150\_CPAY\_MCAID\_HMO[1] = 1) OR (M0150\_CPAY\_MCARE\_HMO[1] = 1 AND  
M0150\_CPAY\_MCAID\_FFS[1] = 1 AND M0150\_CPAY\_MCAID\_HMO[1] = 1)) AND  
M0150\_CPAY\_NONE[1] = 0 AND M0150\_CPAY\_WRKCOMP[1] = 0  
**THEN**  
    PAY\_MCAREANDMCAID = 1  
**ELSE**  
    PAY\_MCAREANDMCAID = 0  
**END IF**

Payment Source: Medicaid Only

**IF** (M0150\_CPAY\_MCAID\_FFS[1] = 1 OR M0150\_CPAY\_MCAID\_HMO[1] = 1) AND  
M0150\_CPAY\_NONE[1] = 0 AND M0150\_CPAY\_MCARE\_FFS[1] = 0 AND  
M0150\_CPAY\_MCARE\_HMO[1] = 0 AND M0150\_CPAY\_WRKCOMP[1] = 0 AND  
M0150\_CPAY\_TITLEPGMS[1] = 0 AND M0150\_CPAY\_OTH\_GOVT[1] = 0 AND  
M0150\_CPAY\_PRIV\_INS[1] = 0 AND M0150\_CPAY\_PRIV\_HMO[1] = 0 AND  
M0150\_CPAY\_SELFPAY[1] = 0 AND M0150\_CPAY\_OTHER[1] = 0 AND M0150\_CPAY\_UK[1] = 0  
**THEN**

```
        PAY_MCAID_ONLY = 1
ELSE
        PAY_MCAID_ONLY = 0
END IF
```

Payment Source: Other Combinations

```
IF PAY_MCARE_FFS = 0 AND PAY_MCARE_HMO = 0 AND PAY_MCAREANDMCAID = 0 AND
PAY_MCAID_ONLY = 0
THEN
        PAY_OTHER_COMBO = 1
ELSE
        PAY_OTHER_COMBO = 0
END IF
```

#### 4. SOC/ROC and Admission Source

Discharged from facility in past 14 days

```
IF (M1000_DC_IPPS_14_DA[1] = 01 OR M1000_DC_SNF_14_DA[1] = 01 OR M1000_DC_IRF_14_DA[1] = 01 OR
M1000_DC_LTC_14_DA[1] = 01 OR M1000_DC_LTCH_14_DA[1] = 01 OR M1000_DC_PSYCH_14_DA[1] = 01)
THEN
        INPT_FACILITY = 1
ELSE
        INPT_FACILITY = 0
END IF
```

Start of Care - Further visits planned: Discharged from facility in past 14 days

```
IF (M0100_ASSMT_REASON[1] = 01 AND INPT_FACILITY = 1)
THEN
        SOC_INPT = 1
ELSE
        SOC_INPT = 0
END IF
```

Start of Care - Further visits planned: Not Discharged from facility in past 14 days

```
IF (M0100_ASSMT_REASON[1] = 01 AND INPT_FACILITY = 0)
THEN
        SOC_COMM = 1
ELSE
        SOC_COMM = 0
END IF
```

Resumption of care (after inpatient stay)

```
IF (M0100_ASSMT_REASON[1] = 03)
THEN
        ROC = 1
ELSE
        ROC = 0
```

END IF

## 5. Post-Acute Facility Admission Source

Not discharged from post-acute facility past 14 days

IF M1000\_DC\_SNF\_14\_DA[1] = 1 OR M1000\_DC\_IRF\_14\_DA[1] = 1 OR M1000\_DC\_NF\_14\_DA[1] = 1 OR  
M1000\_DC\_LTCH\_14\_DA[1] = 1 OR M1000\_DC\_PSYCH\_14\_DA[1] = 1

THEN

INPT\_NOPOSTACUTE = 0

ELSE

INPT\_NOPOSTACUTE = 1

END IF

Discharged from post-acute facility past 14 days

IF M1000\_DC\_SNF\_14\_DA[1] = 1 OR M1000\_DC\_IRF\_14\_DA[1] = 1 OR M1000\_DC\_NF\_14\_DA[1] = 1 OR  
M1000\_DC\_LTCH\_14\_DA[1] = 1 OR M1000\_DC\_PSYCH\_14\_DA[1] = 1

THEN

INPT\_POSTACUTE = 1

ELSE

INPT\_POSTACUTE = 0

END IF

## 6. Risk of Hospitalization

Risk of Hospitalization: History of falls in past 12 months

IF M1033\_HOSP\_RISK\_HSTRY\_FALLS[1] = 1

THEN

RISK\_HSTRY\_FALLS = 1

ELSE

RISK\_HSTRY\_FALLS = 0

END IF

Risk of Hospitalization: Unintentional weight loss in past 12 months

IF M1033\_HOSP\_RISK\_WEIGHT\_LOSS[1] = 1

THEN

RISK\_WEIGHTLOSS = 1

ELSE

RISK\_WEIGHTLOSS = 0

END IF

Risk of Hospitalization: Multiple hospitalizations in past 6 months

IF M1033\_HOSP\_RISK\_MLTPL\_HOSPZTN[1] = 1

THEN

RISK\_MLTPL\_HOSPZTN = 1

ELSE

RISK\_MLTPL\_HOSPZTN = 0

END IF

Risk of Hospitalization: Multiple ED visits in past 6 months

```
IF M1033_HOSP_RISK_MLTPL_ED_VISIT[1] = 1
THEN
    RISK_ED = 1
ELSE
    RISK_ED = 0
END IF
```

Risk of Hospitalization: Recent decline mental/emotional decline in past 3 months

```
IF M1033_HOSP_RISK_MNTL_BHV_DCLN[1] = 1
THEN
    RISK_RCNT_DCLN = 1
ELSE
    RISK_RCNT_DCLN = 0
END IF
```

Risk of Hospitalization: Difficulty complying with medical instruction in past 3 months

```
IF M1033_HOSP_RISK_COMPLIANCE[1] = 1
THEN
    RISK_COMPLY = 1
ELSE
    RISK_COMPLY = 0
END IF
```

Risk of Hospitalization: Taking five or more medications

```
IF M1033_HOSP_RISK_5PLUS_MDCTN[1] = 1
THEN
    RISK_5PLUS_MDCTN = 1
ELSE
    RISK_5PLUS_MDCTN = 0
END IF
```

Risk of Hospitalization: Reports Exhaustion

```
IF M1033_HOSP_RISK_CRNT_EXHSTN[1] = 1
THEN
    RISK_EXHAUST = 1
ELSE
    RISK_EXHAUST = 0
END IF
```

Risk of Hospitalization: Other unlisted risk factors

```
IF M1033_HOSP_RISK_OTHR_RISK[1] = 1
THEN
    RISK_OTHR = 1
ELSE
    RISK_OTHR = 0
END IF
```

Risk of Hospitalization: None of the Above

```
IF M1033_HOSP_RISK_NONE_ABOVE[1] = 1
THEN
    RISK_NONE = 1
ELSE
    RISK_NONE = 0
END IF
```

## 7. Availability of Assistance

### Availability of Assistance

Around the clock

```
IF M1100_PTNT_LVG_STUTN[1] = 01 OR M1100_PTNT_LVG_STUTN[1] = 06 OR
M1100_PTNT_LVG_STUTN[1] = 11
THEN
    ASSIST_ARND_CLOCK = 1
ELSE
    ASSIST_ARND_CLOCK = 0
END IF
```

Regular daytime

```
IF M1100_PTNT_LVG_STUTN[1] = 02 OR M1100_PTNT_LVG_STUTN[1] = 07 OR
M1100_PTNT_LVG_STUTN[1] = 12
THEN
    ASSIST_REGDAY = 1
ELSE
    ASSIST_REGDAY = 0
END IF
```

Regular nighttime

```
IF M1100_PTNT_LVG_STUTN[1] = 03 OR M1100_PTNT_LVG_STUTN[1] = 08 OR
M1100_PTNT_LVG_STUTN[1] = 13
THEN
    ASSIST_REGNITE = 1
ELSE
    ASSIST_REGNITE = 0
END IF
```

Occasional/None

```
IF M1100_PTNT_LVG_STUTN[1] = 04 OR M1100_PTNT_LVG_STUTN[1] = 05 OR
M1100_PTNT_LVG_STUTN[1] = 09 OR M1100_PTNT_LVG_STUTN[1] = 10 OR
M1100_PTNT_LVG_STUTN[1] = 14 OR M1100_PTNT_LVG_STUTN[1] = 15
THEN
    ASSIST_OCC_NONE = 1
ELSE
    ASSIST_OCC_NONE = 0
```

**END IF**

### **Living Arrangement**

#### Lives alone

**IF** M1100\_PTNT\_LVG\_STUTN[1] = 01 **OR** M1100\_PTNT\_LVG\_STUTN[1] = 02 **OR**  
M1100\_PTNT\_LVG\_STUTN[1] = 03 **OR** M1100\_PTNT\_LVG\_STUTN[1] = 04 **OR**  
M1100\_PTNT\_LVG\_STUTN[1] = 05

**THEN**

LIV\_ALONE = 1

**ELSE**

LIV\_ALONE = 0

**END IF**

#### Lives with Others

**IF** M1100\_PTNT\_LVG\_STUTN[1] = 06 **OR** M1100\_PTNT\_LVG\_STUTN[1] = 07 **OR**  
M1100\_PTNT\_LVG\_STUTN[1] = 08 **OR** M1100\_PTNT\_LVG\_STUTN[1] = 09 **OR**  
M1100\_PTNT\_LVG\_STUTN[1] = 10

**THEN**

LIV\_OTHERS = 1

**ELSE**

LIV\_OTHERS = 0

**END IF**

#### Lives in a Congregate Situation

**IF** M1100\_PTNT\_LVG\_STUTN[1] = 11 **OR** M1100\_PTNT\_LVG\_STUTN[1] = 12 **OR**  
M1100\_PTNT\_LVG\_STUTN[1] = 13 **OR** M1100\_PTNT\_LVG\_STUTN[1] = 14 **OR**  
M1100\_PTNT\_LVG\_STUTN[1] = 15

**THEN**

LIV\_CONGREGATE = 1

**ELSE**

LIV\_CONGREGATE = 0

**END IF**

## **8. Pressure Ulcers**

#### None or Stage I Present

**IF** M1306\_UNHLD\_STG2\_PRSR\_ULCR[1] = 00 **AND**  
(M1322\_NBR\_PRSULC\_STG1[1] = 00 **OR** M1322\_NBR\_PRSULC\_STG1[1] = 01 **OR**  
M1322\_NBR\_PRSULC\_STG1[1] = 02 **OR** M1322\_NBR\_PRSULC\_STG1[1] = 03 **OR**  
M1322\_NBR\_PRSULC\_STG1[1] = 04)

**THEN**

PU\_NONE\_STG1ONLY = 1

**ELSE**

PU\_NONE\_STG1ONLY = 0

**END IF**

Stage II or Higher and Unstageable Present

```
IF M1311_NBR_PRSULC_STG2_A1[1] > 0 OR M1311_NBR_PRSULC_STG3_B1[1] > 0 OR  
M1311_NBR_PRSULC_STG4_C1[1] > 0 OR M1311_NSTG_DRSG_D1[1] > 0 OR  
M1311_NSTG_CVRG_E1[1] > 0 OR M1311_DEEP_TSUE_F1[1] > 0  
THEN  
    PU_STG2PLUS_UNSTG = 1  
ELSE  
    PU_STG2PLUS_UNSTG = 0  
END IF
```

## 9. Stasis Ulcers

Stasis Ulcer: No observable stasis ulcers

```
IF M1330_STAS_ULCR_PRSNT[1] = 00 OR M1330_STAS_ULCR_PRSNT[1] = 03  
THEN  
    STAS_ULCR_NONE = 1  
ELSE  
    STAS_ULCR_NONE = 0  
END IF
```

Stasis Ulcer: 1 observable stasis ulcer only

```
IF M1332_NBR_STAS_ULCR[1] = 1  
THEN  
    STAS_ULCR_OBS_1 = 1  
ELSE  
    STAS_ULCR_OBS_1 = 0  
END IF
```

Stasis Ulcer: Multiple observable stasis ulcers

```
IF M1332_NBR_STAS_ULCR[1] = 2 OR M1332_NBR_STAS_ULCR[1] = 3 OR M1332_NBR_STAS_ULCR[1] = 4  
THEN  
    STAS_ULCR_OBS_2PLUS = 1  
ELSE  
    STAS_ULCR_OBS_2PLUS = 0  
END IF
```

## 10. Surgical Wounds

Status of Surgical Wound: None

```
IF M1342_STUS_PRBLM_SRGCL_WND[1] = MISSING  
THEN  
    SRG_WND_OBS_NONE = 1  
ELSE  
    SRG_WND_OBS_NONE = 0  
END IF
```



Status of Surgical Wound: Newly Epithelialized

```
IF M1342_STUS_PRBLM_SRGCL_WND[1] = 00
THEN
    SRG_WND_OBS_EPI = 1
ELSE
    SRG_WND_OBS_EPI = 0
END IF
```

Status of Surgical Wound: Fully granulating or early/partial granulation

```
IF M1342_STUS_PRBLM_SRGCL_WND[1] = 01 OR M1342_STUS_PRBLM_SRGCL_WND[1] = 02
THEN
    SRG_WND_OBS_GRAN = 1
ELSE
    SRG_WND_OBS_GRAN = 0
END IF
```

Status of Surgical Wound: Not healing

```
IF M1342_STUS_PRBLM_SRGCL_WND[1] = 03
THEN
    SRG_WND_OBS_NOHEAL = 1
ELSE
    SRG_WND_OBS_NOHEAL = 0
END IF
```

## 11. Dyspnea

Dyspnea: Not short of breath

```
IF (M1400_WHEN_DYSPNEIC[1] = 00)
THEN
    DYSP0 = 1
ELSE
    DYSP0 = 0
END IF
```

Dyspnea: Walking more than 20 feet, climbing stairs

```
IF (M1400_WHEN_DYSPNEIC[1] = 01)
THEN
    DYSP1 = 1
ELSE
    DYSP1 = 0
END IF
```

Dyspnea: Moderate exertion

```
IF (M1400_WHEN_DYSPNEIC[1] = 02)
THEN
    DYSP2 = 1
ELSE
```

DYSP2 = 0  
END IF

Dyspnea: Minimal to no exertion

IF (M1400\_WHEN\_DYSPNEIC[1] = 03 OR M1400\_WHEN\_DYSPNEIC[1] = 04)  
THEN  
DYSP34 = 1  
ELSE  
DYSP34 = 0  
END IF

## 12. Urinary Status

Urinary incontinence/catheter: None

IF M1610\_UR\_INCONT[1] = 00  
THEN  
URINCONT\_NONE = 1  
ELSE  
URINCONT\_NONE = 0  
END IF

Urinary incontinence/catheter: Incontinent

IF M1610\_UR\_INCONT[1] = 01  
THEN  
URINCONT\_INCONT = 1  
ELSE  
URINCONT\_INCONT = 0  
END IF

Urinary incontinence/catheter: Catheter

IF M1610\_UR\_INCONT[1] = 02  
THEN  
URINCONT\_CATH = 1  
ELSE  
URINCONT\_CATH = 0  
END IF

## 13. Bowel Incontinence

Bowel incontinence Frequency: Never or Very Rare

IF M1620\_BWL\_INCONT[1] = 00 OR M1620\_BWL\_INCONT[1] = UK  
THEN  
BWL\_NONE\_UK = 1  
ELSE  
BWL\_NONE\_UK = 0  
END IF

Bowel incontinence Frequency: Less than once a week

IF M1620\_BWL\_INCONT[1] = 01

THEN

BWL\_FR1 = 1

ELSE

BWL\_FR1 = 0

END IF

Bowel incontinence Frequency: One to Three times a week

IF M1620\_BWL\_INCONT[1] = 02

THEN

BWL\_FR2 = 1

ELSE

BWL\_FR2 = 0

END IF

Bowel incontinence Frequency: Four to six times a week or more

IF M1620\_BWL\_INCONT[1] = 03 OR M1620\_BWL\_INCONT[1] = 04 OR M1620\_INCONT[1] = 05

THEN

BWL\_FR345 = 1

ELSE

BWL\_FR345 = 0

END IF

Bowel incontinence Frequency: Ostomy for bowel elimination

IF M1620\_BWL\_INCONT[1] = NA

THEN

BWL\_OSTOMY = 1

ELSE

BWL\_OSTOMY = 0

END IF

## 14. Cognitive function

Cognitive Functioning: Alert and focused

IF M1700\_COG\_FUNCTION[1] = 00

THEN

COGN0 = 1

ELSE

COGN0 = 0

END IF

Cognitive Functioning: Requires prompting under stress

IF M1700\_COG\_FUNCTION[1] = 01

THEN

COGN1 = 1

ELSE

COGN1 = 0  
END IF

Cognitive Functioning: Requires assist in special circumstances

IF M1700\_COG\_FUNCTION[1] = 02

THEN

COGN2 = 1

ELSE

COGN2 = 0

END IF

Cognitive Functioning: Requires considerable assist/totally dependent

IF M1700\_COG\_FUNCTION[1] = 03 OR M1700\_COG\_FUNCTION[1] = 04

THEN

COGN34 = 1

ELSE

COGN34 = 0

END IF

## 15. Confusion

Confused: Never

IF M1710\_WHEN\_CONFUSED[1] = 0 OR M1710\_WHEN\_CONFUSED[1] = NA

THEN

CONF0 = 1

ELSE

CONF0 = 0

END IF

Confused: In new or complex situations

IF M1710\_WHEN\_CONFUSED[1] = 01

THEN

CONF1 = 1

ELSE

CONF1 = 0

END IF

Confused: Sometimes

IF M1710\_WHEN\_CONFUSED[1] = 02 OR M1710\_WHEN\_CONFUSED[1] = 03

THEN

CONF23 = 1

ELSE

CONF23 = 0

END IF

Confused: Constantly

IF M1710\_WHEN\_CONFUSED[1] = 04

**THEN**  
    CONF4 = 1  
**ELSE**  
    CONF4 = 0  
**END IF**

## 16. Anxiety

Anxiety: None of the time

**IF** M1720\_WHEN\_ANXIOUS[1] = 00 **OR** M1720\_WHEN\_ANXIOUS[1] = NA

**THEN**  
    ANX0 = 1  
**ELSE**  
    ANX0 = 0  
**END IF**

Anxiety: Less often than daily

**IF** M1720\_WHEN\_ANXIOUS[1] = 01

**THEN**  
    ANX1 = 1  
**ELSE**  
    ANX1 = 0  
**END IF**

Anxiety: Daily, but not constantly

**IF** M1720\_WHEN\_ANXIOUS[1] = 02

**THEN**  
    ANX2 = 1  
**ELSE**  
    ANX2 = 0  
**END IF**

Anxiety: All of the time

**IF** M1720\_WHEN\_ANXIOUS[1] = 03

**THEN**  
    ANX3 = 1  
**ELSE**  
    ANX3 = 0  
**END IF**

## 17. Patient Mood Screening (PHQ-2to9)

Patient Mood Screening (PHQ-2to9): Patient meets criteria for further evaluation

**IF** D0150\_A2[1] = 02 **OR**  
    D0150\_A2[1] = 03 **OR**  
    D0150\_B2[1] = 02 **OR**  
    D0150\_B2[1] = 03

**THEN**  
PHQ2\_TO9\_MEET = 1  
**ELSE**  
PHQ2\_TO9\_MEET = 0

Patient Mood Screening (PHQ-2to9): Patient does not meet criteria for further evaluation  
**IF** (D0150\_A2[1] = 00 **OR** D0150\_A2[1] = 01) **AND** (D0150\_B2[1] = 00 **OR** D0150\_B2[1] = 01)  
**THEN**  
PHQ2\_TO9\_NOTMEET = 1  
**ELSE**  
PHQ2\_TO9\_NOTMEET = 0

Patient Mood Screening (PHQ-2to9): Patient was not screened  
**IF** ((D0150\_A2[1] = ^ **AND** (D0150\_B2[1] = 00 **OR** D0150\_B2[1] = 01 **OR** D0150\_B2[1] = ^)) **OR**  
((D0150\_B2[1] = ^ **AND** (D0150\_A2[1] = 00 **OR** D0150\_A2[1] = 01 **OR** D0150\_A2[1] = ^))  
**THEN**  
PHQ2\_TO9\_NA = 1  
**ELSE**  
PHQ2\_TO9\_NA = 0

## 18. Behavioral Symptoms

Behavioral: None  
**IF** M1740\_BD\_NONE[1] = 01  
**THEN**  
BEHAV\_NONE = 1  
**ELSE**  
BEHAV\_NONE = 0  
**END IF**

Behavioral: Memory Deficit  
**IF** M1740\_BD\_MEM\_DEFICIT[1] = 01  
**THEN**  
BEHAV\_MEM\_DEFICIT = 1  
**ELSE**  
BEHAV\_MEM\_DEFICIT = 0  
**END IF**

Behavioral: Impaired decision making  
**IF** M1740\_BD\_IMP\_DECISN[1] = 01  
**THEN**  
BEHAV\_IMPR\_DECISN = 1  
**ELSE**  
BEHAV\_IMPR\_DECISN = 0  
**END IF**

Behavioral: Verbally disruptive, physical aggression, disruptive, or delusional

```
IF M1740_BD_VERBAL[1] = 01 OR M1740_BD_PHYSICAL[1] = 01 OR  
M1740_BD_SOC_INAPPRO[1] = 01 OR M1740_BD_DELUSIONS[1] = 01  
THEN  
    BEHAV_OTHR = 1  
ELSE  
    BEHAV_OTHR = 0  
END IF
```

## 19. Disruptive Behavior Frequency

Frequency of Disruptive Behavior: Never

```
IF M1745_BEH_PROB_FREQ[1] = 00  
THEN  
    BEHPFR0 = 1  
ELSE  
    BEHPFR0 = 0  
END IF
```

Frequency of Disruptive Behavior: Once a month or less

```
IF M1745_BEH_PROB_FREQ[1] = 01 OR M1745_BEH_PROB_FREQ[1] = 02  
THEN  
    BEHPFR12 = 1  
ELSE  
    BEHPFR12 = 0  
END IF
```

Frequency of Disruptive Behavior: Several times a month

```
IF M1745_BEH_PROB_FREQ[1] = 03  
THEN  
    BEHPFR3 = 1  
ELSE  
    BEHPFR3 = 0  
END IF
```

Frequency of Disruptive Behavior: Several times a week

```
IF M1745_BEH_PROB_FREQ[1] = 4  
THEN  
    BEHPFR4 = 1  
ELSE  
    BEHPFR4 = 0  
END IF
```

Frequency of Disruptive Behavior: At least once daily

```
IF M1745_BEH_PROB_FREQ[1] = 5  
THEN  
    BEHPFR5 = 1
```

**ELSE**  
    BEHPFR5 = 0  
**END IF**

## **20. Grooming**

*Grooming: Able to groom self unaided*

**IF** M1800\_CRNT\_GROOMING[1] = 00

**THEN**

    GROOM0 = 1

**ELSE**

    GROOM0 = 0

**END IF**

*Grooming: Grooming utensils must be placed within reach*

**IF** M1800\_CRNT\_GROOMING[1] = 01

**THEN**

    GROOM1 = 1

**ELSE**

    GROOM1 = 0

**END IF**

*Grooming: Assistance needed*

**IF** M1800\_CRNT\_GROOMING[1] = 02

**THEN**

    GROOM2 = 1

**ELSE**

    GROOM2 = 0

**END IF**

*Grooming: Entirely dependent upon someone else*

**IF** M1800\_CRNT\_GROOMING[1] = 03

**THEN**

    GROOM3 = 1

**ELSE**

    GROOM3 = 0

**END IF**

## **21. Upper Body Dressing**

*Ability to Dress Upper Body: No help needed*

**IF** M1810\_CRNT\_DRESS\_UPPER[1] = 00

**THEN**

    UPPER0 = 1

**ELSE**

    UPPER0 = 0

**END IF**



Ability to Dress Upper Body: Needs clothing laid out

```
IF M1810_CRNT_DRESS_UPPER[1] = 01
THEN
    UPPER1 = 1
ELSE
    UPPER1 = 0
END IF
```

Ability to Dress Upper Body: Needs assistance needed putting on clothing

```
IF M1810_CRNT_DRESS_UPPER[1] = 02
THEN
    UPPER2 = 1
ELSE
    UPPER2 = 0
END IF
```

Ability to Dress Upper Body: Entirely dependent upon someone else

```
IF M1810_CRNT_DRESS_UPPER[1] = 03
THEN
    UPPER3 = 1
ELSE
    UPPER3 = 0
END IF
```

## 22. Lower Body Dressing

Ability to Dress Lower Body: No help needed

```
IF M1820_CRNT_DRESS_LOWER[1] = 00
THEN
    LOWER0 = 1
ELSE
    LOWER0 = 0
END IF
```

Ability to Dress Lower Body: Needs clothing/shoes laid out

```
IF M1820_CRNT_DRESS_LOWER[1] = 01
THEN
    LOWER1 = 1
ELSE
    LOWER1 = 0
END IF
```

Ability to Dress Lower Body: Assist needed putting on clothing

```
IF M1820_CRNT_DRESS_LOWER[1] = 02
THEN
    LOWER2 = 1
ELSE
    LOWER2 = 0
```

**END IF**

*Ability to Dress Lower Body: Entirely dependent upon someone else*

**IF** M1820\_CRNT\_DRESS\_LOWER[1] = 03

**THEN**

    LOWER3 = 1

**ELSE**

    LOWER3 = 0

**END IF**

## **23. Bathing**

*Bathing: Independently in shower/tub*

**IF** M1830\_CRNT\_BATHING[1] = 00

**THEN**

    BATH0 = 1

**ELSE**

    BATH0 = 0

**END IF**

*Bathing: With the use of devices in shower/tub*

**IF** M1830\_CRNT\_BATHING[1] = 01

**THEN**

    BATH1 = 1

**ELSE**

    BATH1 = 0

**END IF**

*Bathing: With intermittent assistance in shower/tub*

**IF** M1830\_CRNT\_BATHING[1] = 02

**THEN**

    BATH2 = 1

**ELSE**

    BATH2 = 0

**END IF**

*Bathing: Participates with supervision in shower/tub*

**IF** M1830\_CRNT\_BATHING[1] = 03

**THEN**

    BATH3 = 1

**ELSE**

    BATH3 = 0

**END IF**

*Bathing: Independent at sink, in chair, or on commode*

**IF** M1830\_CRNT\_BATHING[1] = 04

**THEN**

    BATH4 = 1

**ELSE**  
    BATH4 = 0  
**END IF**

*Bathing: Participates with assist at sink, in char, or commode*

**IF** M1830\_CRNT\_BATHING[1] = 05  
**THEN**  
    BATH5 = 1  
**ELSE**  
    BATH5 = 0  
**END IF**

*Bathing: Unable to participate; bathed totally by another*

**IF** M1830\_CRNT\_BATHING[1] = 06  
**THEN**  
    BATH6 = 1  
**ELSE**  
    BATH6 = 0  
**END IF**

## **24. Toilet Transferring**

*Toilet Transferring: No assistance needed*

**IF** M1840\_CRNT\_TOILTG[1] = 00  
**THEN**  
    TLTTRN0 = 1  
**ELSE**  
    TLTTRN0 = 0  
**END IF**

*Toilet Transferring: To/from/on/off toilet with human assist*

**IF** M1840\_CRNT\_TOILTG[1] = 01  
**THEN**  
    TLTTRN1 = 1  
**ELSE**  
    TLTTRN1 = 0  
**END IF**

*Toilet Transferring: Able to self-transfer to bedside commode*

**IF** M1840\_CRNT\_TOILTG[1] = 02  
**THEN**  
    TLTTRN2 = 1  
**ELSE**  
    TLTTRN2 = 0  
**END IF**

*Toilet Transferring: Unable to transfer to/from toilet or commode*

**IF** M1840\_CRNT\_TOILTG[1] = 03 **OR** M1840\_CRNT\_TOILTG[1] = 04

**THEN**  
    TLTTRN34 = 1  
**ELSE**  
    TLTTRN34 = 0  
**END IF**

## 25. Toilet Hygiene

Toilet Hygiene Assistance: None needed

**IF** M1845\_CRNT\_TOILTG\_HYGN[1] = 00

**THEN**  
    TLTHYG0 = 1  
**ELSE**  
    TLTHYG0 = 0  
**END IF**

Toilet Hygiene Assistance: Needs supplies laid out

**IF** M1845\_CRNT\_TOILTG\_HYGN[1] = 01

**THEN**  
    TLTHYG1 = 1  
**ELSE**  
    TLTHYG1 = 0  
**END IF**

Toilet Hygiene Assistance: Needs assistance

**IF** M1845\_CRNT\_TOILTG\_HYGN[1] = 02

**THEN**  
    TLTHYG2 = 1  
**ELSE**  
    TLTHYG2 = 0  
**END IF**

Toilet Hygiene Assistance:

**IF** M1845\_CRNT\_TOILTG\_HYGN[1] = 03

**THEN**  
    TLTHYG3 = 1  
**ELSE**  
    TLTHYG3 = 0  
**END IF**

## 26. Transferring

Transferring: No assistance needed

**IF** M1850\_CRNT\_TRNSFRNG[1] = 00

**THEN**  
    TRNFRO = 1  
**ELSE**

TRNFRO = 0  
**END IF**

Transferring: With minimal human assist or with device

**IF** M1850\_CRNT\_TRNSFRNG[1] = 01  
**THEN**  
    TRNFR1 = 1  
**ELSE**  
    TRNFR1 = 0  
**END IF**

Transferring: Bears weight and pivots only

**IF** M1850\_CRNT\_TRNSFRNG[1] = 02  
**THEN**  
    TRNFR2 = 1  
**ELSE**  
    TRNFR2 = 0  
**END IF**

Transferring: Unable or bedfast

**IF** M1850\_CRNT\_TRNSFRNG[1] = 03 **OR** M1850\_CRNT\_TRNSFRNG[1] = 04 **OR**  
M1850\_CRNT\_TRNSFRNG[1] = 05  
**THEN**  
    TRNFR345 = 1  
**ELSE**  
    TRNFR345 = 0  
**END IF**

## 27. Ambulation

Ambulation/Locomotion: Walk Independently

**IF** M1860\_CUR\_AMBLTN[1] = 00  
**THEN**  
    AMBO = 1  
**ELSE**  
    AMBO = 0  
**END IF**

Ambulation/Locomotion: One-handed device on all surfaces

**IF** M1860\_CUR\_AMBLTN[1] = 01  
**THEN**  
    AMB1 = 1  
**ELSE**  
    AMB1 = 0  
**END IF**

Ambulation/Locomotion: Two-handed device/human assist on steps

IF M1860\_CUR\_AMBLTN[1] = 02

THEN

AMB2 = 1

ELSE

AMB2 = 0

END IF

Ambulation/Locomotion: Walks only with supervision or assist

IF M1860\_CUR\_AMBLTN[1] = 03

THEN

AMB3 = 1

ELSE

AMB3 = 0

END IF

Ambulation/Locomotion: Chairfast or bedfast

IF M1860\_CUR\_AMBLTN[1] = 04 OR M1860\_CUR\_AMBLTN[1] = 05 OR M1860\_CUR\_AMBLTN[1] = 06

THEN

AMB456 = 1

ELSE

AMB456 = 0

END IF

## 28. Feeding or Eating

Eating: Independent

IF M1870\_CRNT\_FEEDING[1] = 0

THEN

EAT0 = 1

ELSE

EAT0 = 0

END IF

Eating: Requires set up, intermittent assist or modified consistency

IF M1870\_CRNT\_FEEDING[1] = 1

THEN

EAT1 = 1

ELSE

EAT1 = 0

END IF

Eating: Unable to feed self and must be assisted throughout meal

IF M1870\_CRNT\_FEEDING[1] = 2

THEN

EAT2 = 1

ELSE

EAT2 = 0  
END IF

Eating: Requires tube feedings, or no nutrients orally or via tube

IF M1870\_CRNT\_FEEDING[1] = 03 OR M1870\_CRNT\_FEEDING[1] = 04 OR M1870\_CRNT\_FEEDING[1] = 05  
THEN  
EAT345 = 1  
ELSE  
EAT345 = 0  
END IF

## 29. Oral Medication Management

Management of Oral Meds: Independent

IF M2020\_CRNT\_MGMT\_ORAL\_MDCTN[1] = 00  
M2020\_CRNT\_MGMT\_ORAL\_MDCTN[1] = NA OR  
M2020\_CRNT\_MGMT\_ORAL\_MDCTN[1] = ^ OR  
M2020\_CRNT\_MGMT\_ORAL\_MDCTN[1] = MISSING  
THEN  
ORMED0 = 1  
ELSE  
ORMED0 = 0  
END IF

Management of Oral Meds: Advance dose prep/chart needed

IF M2020\_CRNT\_MGMT\_ORAL\_MDCTN[1] = 01  
THEN  
ORMED1 = 1  
ELSE  
ORMED1 = 0  
END IF

Management of Oral Meds: Reminders needed

IF M2020\_CRNT\_MGMT\_ORAL\_MDCTN[1] = 02  
THEN  
ORMED2 = 1  
ELSE  
ORMED2 = 0  
END IF

Management of Oral Meds: Unable

IF M2020\_CRNT\_MGMT\_ORAL\_MDCTN[1] = 03  
THEN  
ORMED3 = 1  
ELSE  
ORMED3 = 0  
END IF

### 30. Supervision and Safety Assistance

#### None needed

```
IF M2102_CARE_TYPE_SRC_SPRVSN[1] = 00
THEN
    SPRVSN_NONE_NEEDED = 1
ELSE
    SPRVSN_NONE_NEEDED = 0
END IF
```

#### Caregiver currently provides

```
IF M2102_CARE_TYPE_SRC_SPRVSN[1] = 01
THEN
    SPRVSN_CG_PROVIDES = 1
ELSE
    SPRVSN_CG_PROVIDES = 0
END IF
```

#### Caregiver training needed

```
IF M2102_CARE_TYPE_SRC_SPRVSN[1] = 02
THEN
    SPRVSN_NEED_TRAINING = 1
ELSE
    SPRVSN_NEED_TRAINING = 0
END IF
```

#### Uncertain/unlikely to be provided

```
IF M2102_CARE_TYPE_SRC_SPRVSN[1] = 03 OR M2102_CARE_TYPE_SRC_SPRVSN[1] = 04 OR
M2102_CARE_TYPE_SRC_SPRVSN[1] = MISSING
THEN
    SPRVSN_CG_UNCERTAIN_NONE = 1
ELSE
    SPRVSN_CG_UNCERTAIN_NONE = 0
END IF
```

### 31. Hierarchical Condition Categories

*Note: Several intermediate variables are calculated for use in the calculation of these risk factors.*

The following modified version of the 2021 Midyear Final Model Version 24 Software is used to convert ICD-10-CM codes into CMS-Hierarchical Condition Categories (CMS-HCCs) for each quality episode that begins in 2023.<sup>2</sup> The HCC risk factors will always be created with software lagged by two years. For

---

<sup>2</sup> Going forward, the risk adjustment models for OASIS-based quality measures will be updated annually. CMS updates its CMS-HCC model annually and provides software for replicating risk adjustment estimation.



example, quality episodes beginning in 2023 will use 2021 software. For the below pseudo-code, references to {YYYY-2} and {YY-2} translate into the quality episode {YYYY} year minus 2. If the quality episode year {YYYY} is 2023, then {YYYY-2} equals 2021 and {YY-2} equals 21.

### Assign ICD-10-CM codes to Condition Categories

Import F24{YY-2}P1M.TXT as a crosswalk between ICD-10-CM codes (column 1) and the 86 Condition Categories (CCs) in the payment model (column 2). The crosswalk contains duplicates because a single ICD-10-CM code can be associated with up to three Condition Categories (e.g., E1052 matches to CCs 18, 106, and 108). The third column contains a duplicate flag equal to "D" if the record is a duplicate and blank otherwise.

Divide F24{YY-2}P1M.TXT into three datasets. Each dataset will have two columns: HC\_DIAG and CC.

- 1) Save all ICD-10-CMs that are unique and the first record for each duplicate ICD-10-CM in dataset XWALK1.
- 2) Save the second record for each duplicate ICD-10-CM in dataset XWALK2.
- 3) Save the third record, if one exists, for each duplicate ICD-10-CM in dataset XWALK3.

### Create six diagnosis variables

Load quality episodes that begin on or after January {YYYY} in dataset MAIN and create six diagnosis variables (HC\_DIAG1-HC\_DIAG6):

#### Primary Diagnosis:

```
HC_DIAG1 = UPCASE(TRIM(M1021_PMRY_DGNS10_CD_1))
```

```
IF HC_DIAG1 = 00
```

```
    THEN
```

```
        HC_DIAG1 = BLANK
```

```
IF SUBSTRING(HC_DIAG1, 1, .) = . OR SUBSTRING(HC_DIAG1, 1, .) = ^
```

```
THEN
```

```
    HC_DIAG1 = HC_DIAG1, REMOVE(. OR ^)
```

#### Secondary Diagnosis #1:

```
HC_DIAG2 = UPCASE(TRIM(M1023_OTHR_DGNS10_1_CD_1))
```

```
IF HC_DIAG2 = 00
```

```
THEN
```

```
    HC_DIAG2 = BLANK
```

```
IF SUBSTRING(HC_DIAG2, 1, .) = . OR SUBSTRING(HC_DIAG2, 1, .) = ^
```

```
THEN
```

```
    HC_DIAG2 = HC_DIAG2, REMOVE(. OR ^)
```

#### Secondary Diagnosis #2:

```
HC_DIAG3 = UPCASE(TRIM(M1023_OTHR_DGNS10_2_CD_1))
```

---

<https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Risk-Adjustors>

```

IF HC_DIAG3 = 00
THEN
    HC_DIAG3 = BLANK

IF SUBSTRING(HC_DIAG3, 1, .) = . OR SUBSTRING(HC_DIAG3, 1, .) = ^
THEN
    HC_DIAG3 = HC_DIAG3, REMOVE(. OR ^)

```

Secondary Diagnosis #3:

```

HC_DIAG4 = UPCASE(TRIM(M1023_OTHR_DGNS10_3_CD_1))
IF HC_DIAG4 = 00
THEN
    HC_DIAG4 = BLANK
IF SUBSTRING(HC_DIAG4, 1, .) = . OR SUBSTRING(HC_DIAG4, 1, .) = ^
THEN
    HC_DIAG4 = HC_DIAG4, REMOVE(. OR ^)

```

Secondary Diagnosis #4:

```

HC_DIAG5 = UPCASE(TRIM(M1023_OTHR_DGNS10_4_CD_1))
IF HC_DIAG5 = 00
THEN
    HC_DIAG5 = BLANK

IF SUBSTRING(HC_DIAG5, 1, .) = . OR SUBSTRING(HC_DIAG5, 1, .) = ^
THEN
    HC_DIAG5 = HC_DIAG5, REMOVE(. OR ^)

```

Secondary Diagnosis #5:

```

HC_DIAG6 = UPCASE(TRIM(M1023_OTHR_DGNS10_5_CD_1))
IF HC_DIAG6 = 00
THEN
    HC_DIAG6 = BLANK

IF SUBSTRING(HC_DIAG6, 1, .) = . OR SUBSTRING(HC_DIAG6, 1, .) = ^
THEN
    HC_DIAG6 = HC_DIAG6, REMOVE(. OR ^)

```

Create arrays for Condition Categories and Hierarchical Condition Categories

In the *MAIN* dataset, create two arrays: "C" for CCs, "HCC" for CMS-HCCs. Set all elements in C and HCC to zero. Then, flag each element in C if one of the CC#\_# columns contains a CC value. Set each HCC element equal to each element in C.

```

LET N_CC = 204 /* MACRO EQUALING MAXIMUM NUMBER OF HCCS. MACRO INITIALIZED AS %N_CC.*/
ARRAY C = CC1-CC%N_CC
ARRAY HCC = HCC1- HCC%N_CC

DO I = 1 TO %N_CC
    C(I) = 0

```

```

HCC(I) = 0
DO J = 1 TO 6
  IF CC1_(J) = 1 THEN C(I) = 1
  IF CC2_(J) = 1 THEN C(I) = 1
  IF CC3_(J) = 1 THEN C(I) = 1
END
HCC(I) = C(I)
END

```

## Impose Hierarchies

Impose hierarchy using Table 3 in the Appendix. For certain HCC indicators (CC\_HCC in Table 3), if other lower hierarchy HCC indicators (CC\_ZERO1-CC\_ZERO5 in Table 3) are also flagged, then recode those lower hierarchy HCC indicators to zero. Below is an example for imposing hierarchies for neoplasm.

### Neoplasm 1

```

IF HCC8 = 1 AND (HCC9 = 1 OR HCC10 = 1 OR HCC11 = 1 OR HCC12 = 1)
THEN
  HCC9 = 0
  HCC10 = 0
  HCC11 = 0
  HCC12 = 0
END

```

### Neoplasm 2

```

IF HCC9 = 1 AND (HCC10 = 1 OR HCC11 = 1 OR HCC12 = 1), THEN DO
  HCC10 = 0
  HCC11 = 0
  HCC12 = 0
END

```

### Neoplasm 3

```

IF HCC10 = 1 AND (HCC11 = 1 OR HCC12 = 1), THEN DO
  HCC11 = 0
  HCC12 = 0
END

```

### Neoplasm 4

```

IF HCC11 = 1 AND (HCC12 = 1), THEN
  HCC12 = 0

```

**Note:** Please refer to [Appendix Table 3](#) in the Appendix for the complete list of hierarchies that need to be recoded. HCCs not listed in Table 3 do not need to be recoded (e.g., HCC1 for HIV/AIDS). Execution of this step must be performed in linear order from the first record in Table 3 to the second record and so on. If done correctly, Neoplasm 2 through Neoplasm 4 cannot be flagged if Neoplasm 1 is flagged, and likewise for other disease categories.

The above steps create indicators for 204 HCC columns, but there are only 86 CMS-HCCs. Assign labels for these 86 HCCs and remove unlabeled HCC columns (e.g., keep HCC1 and HCC2 and remove HCC3, HCC4, and HCC5). Labels are listed in [Appendix Table 4](#) in the Appendix.

```
DO I=1 TO %N_CC  
  IF HCC(I) HAS LABEL THEN ASSIGN LABEL  
  ELSE DELETE HCC(I)  
END
```

The final output file contains unique quality episode identifiers and 86 CMS-HCC flags (1=yes, 0=no) ranging from HCC1 to HCC189.

## **IV. Functional Discharge Score Risk Factor Technical Specifications**

OASIS data items are referred to in this documentation using field names specified in OASIS Data Submission Specifications published by CMS. "[1]" is appended to the field name if the value is taken from the beginning of episode assessment (Start or Resumption of Care), and "[2]" is appended if the value is to be taken from the assessment conducted at the end of the episode (Discharge, Transfer, or Death).

### **1. SOC/ROC Source**

These covariates indicate whether the patient was admitted from the community at SOC or from a facility at SOC/ROC. Use definition found in [Section III.4](#) and [Section III.5](#).

### **2. History of Falls**

This covariate indicates a history of falls prior to SOC/ROC. Use definition found in [Section III.6](#).

### **3. Risk for Hospitalization**

These covariates indicate multiple hospitalizations, multiple ER visits, decline in status, non-compliance, or polypharmacy. Used as a proxy for Primary Diagnosis Group. Use definition found in [Section III.6](#).

### **4. Availability of Assistance and Living Arrangements**

These covariates indicate the patient's residential circumstance and availability of assistance. Use definition found in [Section III.7](#).

### **5. Bladder Incontinence**

These covariates indicate the patient's level of bladder incontinence. Use definition found in [Section III.12](#).

### **6. Medication Management Needs**

These covariates indicate whether the patient needs medication management assistance for **oral** medication. Use definition found in [Section III.29](#).

### **7. Hierarchical Condition Categories**

Comorbidities are obtained from Items M1021 and M1023 in OASIS. Use definition found in [Section III.31](#).

## 8. Age

Calculate AGE using algorithm defined in Section III.1 of “Risk Adjustment Technical Steps and Risk Factor Specifications.”

Age: 0-34

**IF** AGE < 35

**THEN**

    AGEGRP = 1

    AGE\_LT35 = 1

**END IF**

Age: 35-44

**ELSE IF** 35 <= AGE <= 44

**THEN**

    AGEGRP = 2

    AGE\_3544 = 1

**END IF**

Age: 45-54

**ELSE IF** 45 <= AGE <= 54

**THEN**

    AGEGRP = 3

    AGE\_4554 = 1

**END IF**

Age: 55-64

**ELSE IF** 55 <= AGE <= 64

**THEN**

    AGEGRP = 4

    AGE\_5564 = 1

**END IF**

Age: 65-74

**ELSE IF** 65 <= AGE <= 74

**THEN**

```
    AGEGRP = 5
    AGE_6574 = 1
END IF
```

Age: 75-84

```
ELSE IF 75 <= AGE <= 84
THEN
    AGEGRP = 6
    AGE_7584 = 1
END IF
```

Age: 85-90

```
ELSE IF 85 <= AGE <= 90
THEN
    AGEGRP = 7
    AGE_8590 = 1
END IF
```

Age: 90+

```
ELSE IF AGE > 90
THEN
    AGEGRP = 8
    AGE_91UP = 1
END IF
```

## 9. Wheelchair Need

```
IF (GG0170I[1] NOT IN("01","02","03","04","05","06") AND
    GG0170I[2] NOT IN("01","02","03","04","05","06"))
    AND (GG0170R[1] IN("01","02","03","04","05","06") OR GG0170S[1] IN("01","02","03","04","05","06") OR
    GG0170R[2] IN("01","02","03","04","05","06") OR GG0170S[2] IN("01","02","03","04","05","06"))
THEN
    MOBILITY_FLAG = 1
ELSE
```

```
MOBILITY_FLAG = 0
END IF
```

## 10. SOC/ROC Function Score

For calculated imputed values of the GG items used in calculation of admission function score, consult the attached "Imputation\_Memo\_20231012.docx."

### Admission Mobility: Continuous Form

```
IF MOBILITY_FLAG = 0
THEN
    ADMSN_MOBILITY_SCORE = SUM(IMPTD_GG0130A[1], IMPTD_GG0130B[1], IMPTD_GG0130C[1], IMPTD_GG0170A[1], IMPTD_GG0170C[1], IMPTD_GG0170D[1],
    IMPTD_GG0170E[1], IMPTD_GG0170F[1], IMPTD_GG0170I[1], IMPTD_GG0170J[1])
ELSE
THEN
    ADMSN_MOBILITY_SCORE = SUM(IMPTD_GG0130A[1], IMPTD_GG0130B[1], IMPTD_GG0130C[1], IMPTD_GG0170A[1], IMPTD_GG0170C[1], IMPTD_GG0170D[1],
    IMPTD_GG0170E[1], IMPTD_GG0170F[1], IMPTD_GG0170R[1], IMPTD_GG0170R[1])
END IF
```

### Admission Mobility: Squared Form

```
ADMSN_MOBILITY_SCORE2 = ADMSN_MOBILITY_SCORE * ADMSN_MOBILITY_SCORE
```

## 11. Prior Surgery

```
PR_SURG = 0 *REFERENCE*
IF "Z40" <= UPPERCASE(SUBSTRING(M1021_PRMRY_DGNS10_CD[1], 1, 3)) <= "Z53"
THEN
    PR_SURG = 1
END IF
IF "Z40" <= UPPERCASE(SUBSTRING(M1023_OTHR_DGNS10_1_CD[1], 1, 3)) <= "Z53"
THEN
    PR_SURG = 1
END IF
IF "Z40" <= UPPERCASE(SUBSTRING(M1023_OTHR_DGNS10_2_CD[1], 1, 3)) <= "Z53"
THEN
    PR_SURG = 1
```



```

END IF
IF "Z40" <= UPPERCASE(SUBSTRING(M1023_OTHR_DGNS10_3_CD[1], 1, 3)) <= "Z53"
THEN
    PR_SURG = 1
END IF
IF "Z40" <= UPPERCASE(SUBSTRING(M1023_OTHR_DGNS10_4_CD[1], 1, 3)) <= "Z53"
THEN
    PR_SURG = 1
END IF
IF "Z40" <= UPPERCASE(SUBSTRING(M1023_OTHR_DGNS10_5_CD[1], 1, 3)) <= "Z53"
THEN
    PR_SURG = 1
END IF

```

## 12. Prior Function/Device Use

### A. SELF-CARE

#### Self-Care Dependent

```

IF GG0100A_SELF_CARE_CD[1] = "1"
THEN
    PR_FUNC_SC_DEP = 1
ELSE
    PR_FUNC_SC_DEP = 0
END IF

```

#### Self-Care Some Help

```

IF GG0100A_SELF_CARE_CD[1] = "2"
THEN
    PR_FUNC_SC_SMH = 1
ELSE
    PR_FUNC_SC_SMH = 0
END IF

```

#### Self-Care Independent (Reference)

```
IF GG0100A_SELF_CARE_CD[1] = "3"  
THEN  
    PR_FUNC_SC_IND = 1  
ELSE  
    PR_FUNC_SC_IND = 0  
END IF
```

**B. INDOOR AMBULATION**

Indoor Ambulation Dependent

```
IF GG0100B_INDR_MBLTY_CD[1] IN("1", "9")  
THEN  
    PR_FUNC_AMB_DEP = 1  
ELSE  
    PR_FUNC_AMB_DEP = 0  
END IF
```

Indoor Ambulation Some Help

```
IF GG0100B_INDR_MBLTY_CD[1] = "2"  
THEN  
    PR_FUNC_AMB_SMH = 1  
ELSE  
    PR_FUNC_AMB_SMH = 0  
END IF
```

Indoor Ambulation Independent (Reference)

```
IF GG0100B_INDR_MBLTY_CD[1] = "3"  
THEN  
    PR_FUNC_AMB_IND = 1  
ELSE  
    PR_FUNC_AMB_IND = 0  
END IF
```

**C. STAIR NEGOTIATION**

Stair Negotiation Dependent

```
IF GG0100C_STR_CD[1] IN("1", "9")
THEN
    PR_FUNC_STR_DEP = 1
ELSE
    PR_FUNC_STR_DEP = 0
END IF
```

Stair Negotiation Some Help

```
IF GG0100C_STR_CD[1] = "2"
THEN
    PR_FUNC_STR_SMH = 1
ELSE
    PR_FUNC_STR_SMH = 0
END IF
```

Stair Negotiation Independent (Reference)

```
IF GG0100C_STR_CD[1] = "3"
THEN
    PR_FUNC_STR_IND = 1
ELSE
    PR_FUNC_STR_IND = 0
END IF
```

**D. FUNCTIONAL COGNITION**

Cognition Dependent

```
IF GG0100D_FNCTNL_CGNTN_CD[1] = "1"
THEN
    PR_FUNC_COG_DEP = 1
ELSE
    PR_FUNC_COG_DEP = 0
END IF
```

**E. PRIOR MOBILITY DEVICE/AID**

Walker

**IF** GG0110D\_WLKR\_CD[1] = "1"  
**THEN**  
    PR\_MOBDEV\_WLKR = 1  
**ELSE**  
    PR\_MOBDEV\_WLKR = 0  
**END IF**

Wheelchair

**IF** GG0110A\_MNL\_WLCHR\_CD[1] = "1" **OR** GG0110B\_MTR\_WLCHR\_CD[1] = "1"  
**THEN**  
    PR\_MOBDEV\_WLCHR = 1  
**ELSE**  
    PR\_MOBDEV\_WLCHR = 0  
**END IF**

Mechanical Lift

**IF** GG0110C\_MCHNCL\_LFT\_CD[1] = "1"  
**THEN**  
    PR\_MOBDEV\_LIFT = 1  
**ELSE**  
    PR\_MOBDEV\_LIFT = 0  
**END IF**

Orthotics/Prosthetics

**IF** GG0110E\_PRSTHTC\_CD[1] = "1"  
**THEN**  
    PR\_MOBDEV\_PRSTHTC = 1  
**ELSE**  
    PR\_MOBDEV\_PRSTHTC = 0  
**END IF**

None Of The Above

**IF** GG0110Z\_NO\_PRIOR\_MBLTY\_CD[1] = "1"  
**THEN**

```
        PR_MOBDEV_NONE = 1
ELSE
        PR_MOBDEV_NONE = 0
END IF
```

### 13. Pressure Ulcers

#### None Or Stage 1 Only

```
IF M1306_PRSR_ULCR_UNHLD_STG_2_CD[1] = "0"
THEN
        PU_NONE_STG1ONLY = 1
ELSE
        PU_NONE_STG1ONLY = 0
END IF
```

#### Stage 2

```
IF M1311_NBR_PRSULC_STG2_A1[1] > 0
THEN
        PU_STG2 = 1
ELSE
        PU_STG2 = 0
END IF
```

#### Stage 3 Or Higher, Or Unstageable

```
IF M1311_NBR_PRSULC_STG3_B1[1] > 0 OR M1311_NBR_PRSULC_STG4_C1[1] > 0 OR M1311_NSTG_DRSG_D1[1] > 0 OR M1311_NSTG_CVRG_E1[1] > 0 OR M1311_DEEP_TSUE_F1[1] > 0
THEN
        PU_STG34UNSTG = 1
ELSE IF PU_STG34UNSTG IS UNDEFINED
THEN
        PU_STG34UNSTG = 0
END IF
```

## 14. Cognitive Function

### No Impairment (Reference)

```
IF M1700_CGNTV_FNCTN_CD[1] = "00"  
THEN  
    COG_NOIMPR = 1  
ELSE  
    COG_NOIMPR = 0  
END IF
```

### Moderately Impaired

```
IF M1700_CGNTV_FNCTN_CD[1] IN("01", "02")  
THEN  
    COG_MODIMPR = 1  
ELSE  
    COG_MODIMPR = 0  
END IF
```

### Severely Impaired

```
IF M1700_CGNTV_FNCTN_CD[1] IN("03", "04")  
THEN  
    COG_SVRIMPR = 1  
ELSE  
    COG_SVRIMPR = 0  
END IF
```

## 15. Bowel Incontinence

### Not Incontinent (Reference)

```
IF M1620_BWL_INCNTNC_FREQ_CD[1] IN("00", "UK")  
THEN  
    BWL_NONE_UK = 1  
ELSE  
    BWL_NONE_UK = 0
```

**END IF**

Always Incontinent

**IF** M1620\_BWL\_INCNTNC\_FREQ\_CD[1] IN("04", "05", "NA")

**THEN**

BWL\_ALWAYS = 1

**ELSE**

BWL\_ALWAYS = 0

**END IF**

Incontinent Less Than Daily

**IF** M1620\_BWL\_INCNTNC\_FREQ\_CD[1] IN("01", "02", "03")

**THEN**

BWL\_LESSTHANDAILY = 1

**ELSE**

BWL\_LESSTHANDAILY = 0

**END IF**

## **16. Body Mass Index (BMI)**

**IF** M1060\_WT\_NUM[1] IN("-", "^")

**THEN**

M1060\_WT\_NUM[1] = ""

**END IF**

**IF** M1060\_HGT\_NUM[1] IN("-", "^")

**THEN**

M1060\_HGT\_NUM[1] = ""

**END IF**

WEIGHT = M1060\_WT\_NUM[1]

HEIGHT = M1060\_HGT\_NUM[1]

```
IF WEIGHT NOT MISSING AND HEIGHT NOT MISSING AND HEIGHT NOT = 0
THEN
    BMI = (WEIGHT/(HEIGHT^2))*703
ELSE
    BMI = MISSING
END IF
```

Low BMI

```
IF 12 <= BMI <= 19
THEN
    LOWBMI = 1
ELSE
    LOWBMI = 0
END IF
```

High BMI

```
IF BMI > 50 AND BMI NOT MISSING
THEN
    HIGHBMI = 1
ELSE
    HIGHBMI = 0
END IF
```

## 17. Confusion

Never (Reference)

```
IF M1710_CNFSF_FREQ_CD[1] = "00"
THEN
    CNFSF_NEVER = 1
ELSE
    CNFSF_NEVER = 0
END IF
```

Moderate



```
IF M1710_CNFSF_FREQ_CD[1] IN("01", "02")
THEN
    CNFSF_MOD = 1
ELSE
    CNFSF_MOD = 0
END IF
```

Severe

```
IF M1710_CNFSF_FREQ_CD[1] IN("03", "04")
THEN
    CNFSF_SVR = 1
ELSE
    CNFSF_SVR = 0
END IF
```

## 18. Supervision and Safety Sources of Assistance

No Assistance Needed (Reference)

SUPSFT\_NO\_NEED = (M2102\_CARE\_ASTNC\_SFTY\_CD[1] = "00")

Non-agency caregiver(s) currently provide assistance

SUPSFT\_CG\_PROV\_AST = (M2102\_CARE\_ASTNC\_SFTY\_CD[1] = "01")

Non-agency caregiver(s) need training/supportive services to provide assistance

SUPSFT\_CG\_NEED\_SPRT = (M2102\_CARE\_ASTNC\_SFTY\_CD[1] = "02")

Non-agency caregiver(s) are not likely to provide assistance

SUPSFT\_CG\_UNLKY\_AST = (M2102\_CARE\_ASTNC\_SFTY\_CD[1] = "03")

Assistance needed, but no non-agency caregivers available

SUPSFT\_CG\_NOT\_AVAIL = (M2102\_CARE\_ASTNC\_SFTY\_CD[1] = "04")

### **19. Locomotion 1 (used for Imputation only)**

IF MOBILITY\_FLAG = 0

THEN

GG0170I

END IF

IF MOBILITY\_FLAG = 1

THEN

GG0170R

END IF

### **20. Locomotion 2 (used for Imputation only)**

IF MOBILITY\_FLAG = 0

THEN

GG0170J

END IF

IF MOBILITY\_FLAG = 1

THEN

GG0170R

END IF

### **21. Locomotion 3 (used for Imputation only)**

IF MOBILITY\_FLAG = 0

THEN

GG0170K

**END IF**

**IF MOBILITY\_FLAG = 1**

**THEN**

GG0170S

**END IF**

## **22. Locomotion 4 (used for Imputation only)**

**IF MOBILITY\_FLAG = 0**

**THEN**

GG0170L

**END IF**

**IF MOBILITY\_FLAG = 1**

**THEN**

GG0170S

**END IF**

**Appendix Table 1: Description of Risk Factors**

Effective January 1, 2023

Risk Factor Group #	Risk Factor Group	Risk Factor	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	

Risk Factor Group #	Risk Factor Group	Risk Factor	Response Notes	OASIS Item	OASIS Item Description	Variable Name	Excluded Category Indicator
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 Group #	Risk Factor Group	Risk Factor	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	

Risk Factor Group #	Risk Factor Group	Risk Factor	Response Notes	OASIS Item	OASIS Item Description	Variable Name	Excluded Category Indicator
8	Pressure Ulcers	Pressure ulcer: None or Stage I only present	M1306 response 0 & M1322 response 0, 1, 2, 3, or 4	M1306 M1322	At least 1 Stage 2 or unstageable PU? 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	
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

Risk Factor Group #	Risk Factor Group	Risk Factor	Response Notes	OASIS Item	OASIS Item Description	Variable Name	Excluded Category Indicator
		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 Group #	Risk Factor Group	Risk Factor	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 "^") and ((D0150B2 response 0, 1, or "^")) or (D0150B2 response "^" and (D0150A2 response 0, 1, or "^"))	D0150	Patient Mood Interview (PHQ-2 to 9)	PHQ2_TO9_NA	

Risk Factor Group #	Risk Factor Group	Risk Factor	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	

Risk Factor Group #	Risk Factor Group	Risk Factor	Response Notes	OASIS Item	OASIS Item Description	Variable Name	Excluded Category Indicator
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 Group #	Risk Factor Group	Risk Factor	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	
		Bathing: Unable to participate; bathed totally by another	response 6	M1830	Bathing: Excludes grooming (washing face, washing hands, and shampooing hair).	BATH6	
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	

Risk Factor Group #	Risk Factor Group	Risk Factor	Response Notes	OASIS Item	OASIS Item Description	Variable Name	Excluded Category Indicator
		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 Group #	Risk Factor Group	Risk Factor	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	

Risk Factor Group #	Risk Factor Group	Risk Factor	Response Notes	OASIS Item	OASIS Item Description	Variable Name	Excluded Category Indicator
		Uncertain/unlikely to be provided	response 3 or 4 or missing	M2102	Types and Sources of Assistance	SPRVSN_CG_UNCERTAIN_NON E	
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.  Source: <a href="https://www.cms.gov/medicarehealth-plansmedicareadvtspecratestatsrisk-adjustors/2021-model-softwareicd-10-mappings">https://www.cms.gov/medicarehealth-plansmedicareadvtspecratestatsrisk-adjustors/2021-model-softwareicd-10-mappings</a>	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		M1021, M1023	(M1021) Primary Diagnosis & (M1023) Other Diagnoses	HCC8	
		HCC: Lung and other severe cancers		M1021, M1023	(M1021) Primary Diagnosis & (M1023) Other Diagnoses	HCC9	
		HCC: Lymphoma and other cancers		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				

Risk Factor Group #	Risk Factor Group	Risk Factor	Response Notes	OASIS Item	OASIS Item Description	Variable Name	Excluded Category Indicator
		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	
		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	



Risk Factor Group #	Risk Factor Group	Risk Factor	Response Notes	OASIS Item	OASIS Item Description	Variable Name	Excluded Category Indicator
		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	
		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	

Risk Factor Group #	Risk Factor Group	Risk Factor	Response Notes	OASIS Item	OASIS Item Description	Variable Name	Excluded Category Indicator
		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	

Risk Factor Group #	Risk Factor Group	Risk Factor	Response Notes	OASIS Item	OASIS Item Description	Variable Name	Excluded Category Indicator
		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	
		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	

Risk Factor Group #	Risk Factor Group	Risk Factor	Response Notes	OASIS Item	OASIS Item Description	Variable Name	Excluded Category Indicator
		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	

**Appendix Table 2: Estimated Coefficients**

Effective January 1, 2023

Risk Factor Group #	Risk Factor Group	Risk Factor #	Risk Factor Name	Excluded Category Indicator	Amb	Bathing	Bed Transfer	Bowel Incont	Conf	Dyspnea	Lower Dress	Upper Dress	Oral Meds	Toilet Transfer	DTC	
1	Age	1	AGE_0_54		-0.1456	-0.1063	-0.0709	-0.1676	-0.0498	-0.0271	-0.1120	-0.1619	-0.1029	-0.1588	-0.1766	
		2	AGE_55_59		-0.1524	-0.1198	-0.0997	-0.0590	-0.0536	-0.0980	-0.0965	-0.1325	-0.0838	-0.1196	-0.1320	
		3	AGE_60_64		-0.1468	-0.1312	-0.1228	-0.1018	-0.0735	-0.1135	-0.1020	-0.1343	-0.1133	-0.1355	-0.1085	
		4	AGE_65_69	Excluded category												
		5	AGE_70_74		0.0027	-0.0032	0.0177	0.0165	-0.0422	0.0246	0.0158	-0.0009	-0.0388	0.0106	0.0189	
		6	AGE_75_79		-0.0347	-0.0463	-0.0106	0.0015	-0.1483	-0.0045	-0.0128	-0.0451	-0.1388	-0.0347	0.0029	
		7	AGE_80_84		-0.1197	-0.1330	-0.0889	0.0002	-0.2837	-0.0256	-0.0839	-0.1299	-0.2890	-0.1201	-0.0089	
		8	AGE_85_89		-0.2078	-0.2358	-0.1781	-0.0360	-0.3881	-0.0494	-0.1698	-0.2312	-0.4187	-0.2039	-0.0240	
		9	AGE_90_94		-0.3494	-0.3947	-0.3020	-0.0784	-0.5044	-0.1196	-0.3327	-0.3963	-0.5769	-0.3482	-0.0052	
		10	AGE_95PLUS		-0.5530	-0.6350	-0.4972	-0.1539	-0.5947	-0.2309	-0.5782	-0.6447	-0.7774	-0.5495	-0.0256	
2	Gender	11	GENDER_FEMALE	Excluded category												
		12	GENDER_MALE		0.0541	0.0624	0.0425			-0.0342			-0.0575	0.0318	-0.0574	
3	Payment source	13	PAY_MCARE_FFS	Excluded category												
		14	PAY_MCARE_HMO		-0.0943	-0.0975	-0.0537	0.0448		-0.0074	-0.0532	-0.0611	-0.0298	-0.0087	0.1145	
		15	PAY_MCAREANDMCAID		-0.3388	-0.3844	-0.2674	-0.3061		-0.1760	-0.3215	-0.2464	-0.3633	-0.2395	0.0312	
		16	PAY_MCAID_ONLY		-0.1492	-0.2279	-0.0932	-0.0882		-0.1128	-0.1519	-0.1563	-0.1775	-0.0560	-0.0464	
		17	PAY_OTHER_COMBO		-0.0129	-0.0099	0.1052	0.1803		0.1098	0.0447	0.1179	0.0730	0.2399	0.1480	
4	SOC/ROC and Admission Source	18	SOC_INPT	Excluded category												
		19	SOC_COMM		-0.4099	-0.3616	-0.4107	-0.3563	-0.3757	-0.2979	-0.3529	-0.3811	-0.3457	-0.4201	0.2229	
		20	ROC		-0.4025	-0.3934	-0.4373	-0.2730	-0.2332	-0.3715	-0.4017	-0.4340	-0.3801	-0.4310	-0.6546	
5	Post-acute facility admission source	21	INPT_POSTACUTE		-0.2154	-0.1538	-0.1413		-0.1148	-0.0830	-0.0971	-0.0775	-0.1567	-0.1265	-0.0732	
		22	INPT_NOPOSTACUTE	Excluded category												
6	Risk of Hospitalization	23	RISK_HSTRY_FALLS		-0.0572			0.1140	-0.0636					0.0522	-0.0511	
		24	RISK_WEIGHTLOSS					0.1032	0.0604		0.0518			0.0436	-0.1174	

Risk Factor Group #	Risk Factor Group	Risk Factor #	Risk Factor Name	Excluded Category Indicator	Amb	Bathing	Bed Transfer	Bowel Incont	Conf	Dyspnea	Lower Dress	Upper Dress	Oral Meds	Toilet Transfer	DTC	
		25	RISK_MLTPL_HOSPZTN		-0.0639	-0.0564	-0.0495			-0.0992	-0.0364	-0.0660	-0.0362	-0.0739	-0.2763	
		26	RISK_ED					0.0860								-0.1913
		27	RISK_RCNT_DCLN		0.0954	0.1065	0.1673			0.0897	0.0922	0.0712	0.0569	0.0897		-0.0425
		28	RISK_COMPLY		0.0932	0.1003					0.0881	0.0698	0.0938			
		29	RISK_5PLUS_MDCTN							0.0942	-0.0715				0.0871	-0.1623
		30	RISK_EXHAUST		0.0828	0.1071				0.1047		0.1089	0.0940	0.1073	0.0519	
		31	RISK_OTHR						-0.0889				0.0628			0.0407
		32	RISK_NONE		0.2274	0.2396	0.2185		0.2168	0.2068	0.1552	0.1364	0.2412	0.1847		
7	Availability of Assistance	33	ASSIST_OCC_NONE	Excluded category												
		34	ASSIST_REGNITE		-0.0507	-0.1076	-0.0156	-0.0462	-0.0018	-0.0698	-0.0927	-0.0748	-0.1161	-0.0310		
		35	ASSIST_REGDAY		-0.2123	-0.2527	-0.2661	-0.1774	-0.1389	-0.1049	-0.3428	-0.3012	-0.3156	-0.3333		
		36	ASSIST_ARND_CLOCK		-0.2313	-0.2625	-0.2192	-0.1825	-0.1298	-0.1018	-0.3091	-0.2578	-0.3955	-0.2221		
	Living Arrangement	37	LIV_ALONE		0.1168	0.1423	0.1471	0.0409	0.0726		0.2911	0.2192	0.2822	0.2229		
		38	LIV_OTHERS	Excluded category												
		39	LIV_CONGREGATE		-0.1484	-0.0877	-0.0291	-0.3717	-0.4344		-0.0348	-0.0303	-0.7483	-0.0308		
8	Pressure Ulcers	40	PU_NONE_STG1ONLY	Excluded category												
		41	PU_STG2PLUS_UNSTG		-0.4092	-0.5331	-0.4421	-0.3324		-0.3615	-0.4425	-0.4360	-0.3643	-0.4168	-0.4662	
9	Stasis Ulcer	42	STAS_ULCR_OBS_NONE	Excluded category												
		43	STAS_ULCR_OBS_1		-0.0652	-0.1280	-0.1751			-0.2211	-0.1885	-0.1280	-0.0461	-0.1475	-0.1596	
		44	STAS_ULCR_OBS_2PLUS		-0.2631	-0.3382	-0.3025			-0.3887	-0.3981	-0.3165	-0.1678	-0.2582	-0.5197	
10	Surgical Wound	45	SRG_WND_OBS_NONE	Excluded category												
		46	SRG_WND_OBS_EPI		0.3275	0.3605	0.3280	0.2042	0.2166	0.2260	0.2872	0.3201	0.3663	0.3139	0.2113	
		47	SRG_WND_OBS_GRAN		0.3175	0.3258	0.2772	0.1544	0.2093	0.1467	0.2757	0.2711	0.3123	0.2682	0.1074	
		48	SRG_WND_OBS_NOHEAL		0.4799	0.4503	0.4805	0.3982	0.4376	0.3374	0.4048	0.4607	0.5213	0.4873	0.0744	
11	Dyspnea	49	DYSP0	Excluded category												
		50	DYSP1		0.2881	0.2862	0.2763	0.3145	0.1879		0.2889	0.2679	0.2828	0.2411	-0.0412	
		51	DYSP2		0.2484	0.3144	0.1580	0.2601	0.1676	0.9754	0.2668	0.2451	0.3647	0.1092	-0.1950	
		52	DYSP34		0.3735	0.3893	0.2829	0.4053	0.2794	1.6353	0.3374	0.3029	0.5681	0.2164	-0.3780	

Risk Factor Group #	Risk Factor Group	Risk Factor #	Risk Factor Name	Excluded Category Indicator	Amb	Bathing	Bed Transfer	Bowel Incont	Conf	Dyspnea	Lower Dress	Upper Dress	Oral Meds	Toilet Transfer	DTC	
12	Urinary Status	53	URINCONT_NONE	Excluded category												
		54	URINCONT_INCONT		-0.2766	-0.2719	-0.3118	-0.2881	-0.2060	-0.2332	-0.2741	-0.2607	-0.2565	-0.2923	-0.1178	
		55	URINCONT_CATH		-0.5689	-0.5877	-0.6072	-0.5210	-0.2041	-0.3626	-0.5621	-0.5682	-0.4438	-0.5979	-0.7638	
13	Bowel Incontinence	56	BWL_NONE	Excluded category												
		57	BWL_FR1		-0.1741	-0.1990	-0.1618		-0.0155	-0.1078	-0.1867	-0.1823	-0.1074	-0.1339	-0.0938	
		58	BWL_FR2		-0.3316	-0.3699	-0.3477	0.1124	-0.1346	-0.2217	-0.3625	-0.3630	-0.2457	-0.3062	-0.1806	
		59	BWL_FR345		-0.5065	-0.5877	-0.5966	0.1750	-0.2301	-0.2900	-0.5814	-0.5992	-0.4157	-0.6541	-0.2073	
14	Cognitive function	60	BWL_OSTOMY		-0.1300	-0.2597	-0.1582	0.0000	-0.0504	-0.0676	-0.1799	-0.2102	-0.1078	-0.2564	-0.4139	
		61	COGN0	Excluded category												
		62	COGN1		-0.1181	-0.1476	-0.1871	-0.1270	-0.4186	-0.0873	-0.1484	-0.1587	-0.2778	-0.1823	-0.0366	
		63	COGN2		-0.1983	-0.2710	-0.2308	-0.2192	-0.6888	-0.0939	-0.2600	-0.2959	-0.4688	-0.2748	-0.0502	
15	Confusion	64	COGN34		-0.3252	-0.4478	-0.3449	-0.3101	-0.9922	-0.0720	-0.4392	-0.5126	-0.6760	-0.3881	0.0138	
		65	CONF0	Excluded category												
		66	CONF1		-0.1194	-0.1310	-0.1325	-0.0804		-0.0977	-0.1145	-0.1417	-0.2780	-0.1550	-0.0699	
		67	CONF23		-0.2141	-0.2406	-0.2167	-0.1551	1.3096	-0.0870	-0.2280	-0.2598	-0.4988	-0.2616	-0.0725	
16	Anxiety	68	CONF4		-0.4083	-0.4566	-0.3521	-0.2194	1.8660	-0.0153	-0.4357	-0.5206	-0.8084	-0.4397	0.0002	
		69	ANX0	Excluded category												
		70	ANX1		0.0028	-0.0095	-0.0127	0.0013	-0.0270	-0.1187	-0.0111	-0.0023	0.0195	-0.0005	-0.0231	
		71	ANX2		0.0401	0.0213	0.0326	0.1536	0.0400	-0.1241	0.0431	0.0561	0.0653	0.0632	-0.0561	
17	Depression Screening	72	ANX3		0.1534	0.1350	0.1702	0.3065	0.1569	-0.0400	0.1533	0.1778	0.1908	0.2157	-0.0320	
		73	PHQ2_TO9_NOTMEET	Excluded category												
		74	PHQ2_TO9_MEET		-0.1260	-0.1624	-0.1280	-0.0477	-0.0306	-0.1882	-0.1553	-0.1537	-0.1207	-0.1030	-0.1488	
18	Behavioral Symptoms	75	PHQ2_TO9_NA		-0.2227	-0.2877	-0.2476	-0.1842	-0.2297	-0.1272	-0.3146	-0.3737	-0.2963	-0.3017	-0.0968	
		76	BEHAV_NONE		0.2240	0.2687	0.1888		0.1589	0.1323	0.2273	0.2907	0.3637	0.1944	0.1078	
		77	BEHAV_MEM_DEFICIT						-0.2302					-0.0842	-0.0696	0.0652
		78	BEHAV_IMPR_DECISN		-0.0430				-0.1705	-0.1139	-0.0381				-0.0516	
19		80	BEHPFRO	Excluded category												

Risk Factor Group #	Risk Factor Group	Risk Factor #	Risk Factor Name	Excluded Category Indicator	Amb	Bathing	Bed Transfer	Bowel Incont	Conf	Dyspnea	Lower Dress	Upper Dress	Oral Meds	Toilet Transfer	DTC
	Disruptive Behavior Frequency	81	BEHPFR12		0.2049	0.2519	0.1083	0.0169	0.1074	0.1608	0.2087	0.1830	0.2517	0.0460	0.0428
		82	BEHPFR3		0.1810	0.1987	0.1323	0.0418	0.0963	0.1527	0.1853	0.1873	0.2214	0.1240	0.0106
		83	BEHPFR4		0.1836	0.1996	0.1933	0.0900	0.1197	0.2144	0.1984	0.2074	0.2205	0.1995	0.0435
		84	BEHPFR5		0.1866	0.2012	0.2380	0.1531	0.0606	0.2765	0.2149	0.2296	0.1845	0.2497	0.0950
20	Grooming	85	GROOM0	Excluded category											
		86	GROOM1								0.0187	-0.0533		0.0468	-0.0125
		87	GROOM2								-0.0348	-0.2266		-0.0807	-0.0738
		88	GROOM3								-0.2614	-0.6388		-0.2766	-0.1197
21	Upper Body Dressing	89	UPPER0	Excluded category											
		90	UPPER1			0.0711					0.0609		0.0544	0.1143	0.0558
		91	UPPER2			-0.1187					-0.1674	1.3913	-0.1747	-0.1364	-0.0662
		92	UPPER3			-0.2419					-0.3022	2.7888	-0.4250	-0.2224	-0.0660
22	Lower Body Dressing	93	LOWER0	Excluded category											
		94	LOWER1		0.2481	0.1723							0.1643		
		95	LOWER2		0.1469	0.1050					0.9604		0.1861		
		96	LOWER3		0.1168	0.0941					2.7133		0.2389		
23	Bathing	97	BATH0	Excluded category											
		98	BATH1		-0.3104				0.1143	0.0309	-0.0971				0.2316
		99	BATH2		-0.2311	1.0554			0.1429	0.0342	0.0280				0.2606
		100	BATH3		-0.3304	1.8635			0.1690	0.0785	-0.0458				0.2172
		101	BATH4		-0.2710	2.3000			0.1992	0.1120	0.0609				0.2291
		102	BATH5		-0.1907	2.8351			0.3400	0.3334	0.0161				0.2317
		103	BATH6		-0.5194	3.0200			-0.0183	0.0457	-0.4423				0.1418
24	Toilet Transferring	104	TLTTRN0	Excluded category											
		105	TLTTRN1		0.2398	0.2257	0.1285		0.1857	0.1942	0.1418		0.1972		0.1390
		106	TLTTRN2		0.1577	0.2051	0.0012		0.1608	0.1588	0.0996		0.2369	1.9087	0.0441
		107	TLTTRN34		0.2654	0.2315	-0.0994		0.1531	0.1998	0.0993		0.3116	2.3808	0.0007
25	Toilet Hygiene	108	TLTHYG0	Excluded category											



Risk Factor Group #	Risk Factor Group	Risk Factor #	Risk Factor Name	Excluded Category Indicator	Amb	Bathing	Bed Transfer	Bowel Incont	Conf	Dyspnea	Lower Dress	Upper Dress	Oral Meds	Toilet Transfer	DTC	
		109	TLTHYG1		0.0035	-0.0244	-0.0612	0.2388			-0.1023	-0.1508	0.0022	-0.3275		
		110	TLTHYG2		-0.2067	-0.1383	-0.3749	0.0863			-0.2809	-0.3630	-0.1159	-0.5370		
		111	TLTHYG3		-0.4120	-0.3989	-0.7458	-0.4307			-0.6439	-0.7183	-0.3828	-0.7859		
26	Transferring	112	TRNFR0	Excluded category												
		113	TRNFR1		-0.2762	-0.0967			0.0320	0.0192			0.0664	-0.0662		
		114	TRNFR2		-0.0846	0.1528	2.2364		0.2668	0.3004				0.3712	-0.0149	
		115	TRNFR345		-0.1754	0.0153	2.8715		0.2433	0.2712				0.3171	-0.2834	
27	Ambulation	116	AMB0	Excluded category												
		117	AMB1			-0.2624	-0.5265			-0.1522	-0.2026	-0.0697	-0.0372	-0.2071	0.0739	
		118	AMB2		0.1031	-0.5863	-0.9988			-0.2658	-0.3367	-0.1681	-0.1952	-0.3394	0.0431	
		119	AMB3		1.9729	-0.2801	-0.5887			-0.0021	0.0072	0.2182	0.1436	0.0940	0.1748	
		120	AMB456		1.4478	-1.1906	-1.6254			-0.4108	-0.9394	-0.6353	-0.4173	-0.8768	-0.0884	
28	Feeding or Eating	121	EAT0	Excluded category												
		122	EAT1		-0.0361	-0.0428	-0.1678	-0.0519	-0.0403		-0.0932	-0.1902	-0.0439	-0.2625	-0.0705	
		123	EAT2		-0.1059	-0.1659	-0.3406	-0.2327	-0.0597		-0.2337	-0.4347	-0.2160	-0.4280	-0.0601	
		124	EAT345		-0.2458	-0.5826	-0.5647	-0.4969	-0.2219		-0.5538	-0.8000	-0.5694	-0.7949	-0.3668	
29	Oral Medication Management	125	ORMED0	Excluded category												
		126	ORMED1		0.1451		0.0481	0.0819		0.1133					-0.1244	
		127	ORMED2		0.3199		0.0854	0.1890		0.2211			1.2634		-0.0570	
		128	ORMED3		0.3822		0.3121	0.3746		0.3987			1.6797		-0.0273	
30	Supervision and Safety Assistance	129	SPRVSN_NONE_NEEDED	Excluded category												
		130	SPRVSN_CG_PROVIDES		-0.1582	-0.1896	-0.1882		-0.2433	-0.0892	-0.1935	-0.2569	-0.3029	-0.2651	-0.0447	
		131	SPRVSN_NEED_TRAINING		-0.0290	-0.0066	-0.1006		-0.2019	0.0020	-0.0473	-0.0892	-0.1098	-0.1849	0.0179	
		132	SPRVSN_CG_UNCERTAIN_NONE		-0.1936	-0.1842	-0.2426		-0.2272	-0.2171	-0.1735	-0.2559	-0.1326	-0.2637	-0.1746	
31	Hierarchical Condition Categories	133	hcc1													
		134	hcc2												-0.1807	
		135	hcc6													-0.2973
		136	hcc8		-0.6926	-0.7576	-0.6812	-0.3018	-0.1757	-0.7416	-0.6532	-0.7693	-0.6601	-0.6263	-1.1436	

Risk Factor Group #	Risk Factor Group	Risk Factor #	Risk Factor Name	Excluded Category Indicator	Amb	Bathing	Bed Transfer	Bowel Incont	Conf	Dyspnea	Lower Dress	Upper Dress	Oral Meds	Toilet Transfer	DTC
		137	hcc9		-0.3042	-0.3821	-0.3100		-0.0648	-0.5132	-0.3072	-0.3867	-0.3503	-0.3034	-0.7722
		138	hcc10		-0.2249	-0.2263	-0.2188			-0.2383	-0.2074	-0.2668	-0.2504	-0.1565	-0.7135
		139	hcc11							-0.1548					-0.3956
		140	hcc12							-0.0896		-0.0782			-0.2168
		141	hcc17												-0.2581
		142	hcc18		-0.1341	-0.1027	-0.1468		-0.0393	-0.1533	-0.0957	-0.1071	-0.1249	-0.1583	-0.2594
		143	hcc19											-0.0812	-0.0777
		144	hcc21		-0.1527	-0.1790	-0.1237		-0.1073	-0.1561	-0.0994	-0.1469	-0.2112	-0.1490	-0.2795
		145	hcc22		-0.2609	-0.3291	-0.2272		0.1882	-0.3539	-0.3325	-0.1744		-0.1420	0.1331
		146	hcc23												-0.1997
		147	hcc27		-0.2840	-0.3354	-0.3111		-0.1664	-0.3603	-0.2974	-0.3370	-0.3962	-0.2845	-1.0453
		148	hcc28		-0.2068	-0.2181	-0.1808		-0.1041	-0.2448	-0.1906	-0.2282	-0.2921	-0.1723	-0.6478
		149	hcc29												-0.1561
		150	hcc33												-0.2952
		151	hcc34												-0.5025
		152	hcc35		0.2278	0.1976	0.2034				0.1885	0.1763		0.1557	-0.2977
		153	hcc39		-0.1146	-0.1078	-0.1104							-0.1230	-0.2634
		154	hcc40						0.0653			-0.0669			-0.0610
		155	hcc46		-0.1946					-0.1868		-0.2180		-0.1544	-0.6810
		156	hcc47												-0.2950
		157	hcc48												-0.1462
		158	hcc51		-0.3334	-0.3475	-0.2205	-0.2984	-0.7529		-0.3435	-0.4394	-0.5627	-0.3989	
		159	hcc52		-0.2140	-0.2425	-0.1292	-0.2367	-0.6768	0.0740	-0.2411	-0.3167	-0.4916	-0.3018	0.0435
		160	hcc54						-0.2555				-0.2793		
		161	hcc55												-0.1147
		162	hcc56												
		163	hcc57						-0.3022				-0.4456		-0.3660
		164	hcc58												

Risk Factor Group #	Risk Factor Group	Risk Factor #	Risk Factor Name	Excluded Category Indicator	Amb	Bathing	Bed Transfer	Bowel Incont	Conf	Dyspnea	Lower Dress	Upper Dress	Oral Meds	Toilet Transfer	DTC
		165	hcc59				-0.0884		-0.1325	-0.0641			-0.1214	-0.0831	-0.0625
		166	hcc60										-0.5231		
		167	hcc70		-1.0791	-1.1827	-1.2492	-0.5298			-1.2108	-1.2295	-0.9412	-1.3641	
		168	hcc71		-1.2517	-0.4245	-0.7906	-0.4443			-0.5559	-0.3265	-0.1706	-0.7592	0.1283
		169	hcc72		-0.6073	-0.2782	-0.3501				-0.2844	-0.2592	-0.1680	-0.2947	
		170	hcc73		-1.6164	-1.5456	-1.5024			-1.1146	-1.6512	-1.7862	-1.4899	-1.4186	
		171	hcc74		-0.9118	-0.7945	-0.8181	-0.3391	-0.3593		-0.8240	-0.8623	-0.7450	-0.8214	0.3847
		172	hcc75		-0.1998	-0.1440	-0.1571			-0.1473	-0.1306	-0.1681		-0.1346	-0.0817
		173	hcc76		-1.1144	-0.8187	-1.1053			-0.3647	-0.8869	-0.8722	-0.6423	-0.9499	0.2880
		174	hcc77		-0.7089	-0.4841	-0.6226	-0.2535			-0.5543	-0.4953	-0.3269	-0.5191	
		175	hcc78		-0.4362	-0.3724	-0.3307		-0.1630	-0.0508	-0.4600	-0.4662	-0.3889	-0.3590	-0.0618
		176	hcc79		-0.1529	-0.1597	-0.1281		-0.1944		-0.1128	-0.1692	-0.2552	-0.1650	-0.0720
		177	hcc80		-0.2845	-0.3132			-0.2763				-0.4614	-0.2994	
		178	hcc82			-0.4302				-0.6123	-0.2877	-0.3329	-0.4519		-0.3005
		179	hcc83												
		180	hcc84			-0.0655			0.0913	-0.3892		-0.0761	-0.0782		-0.1428
		181	hcc85		-0.1761	-0.1912	-0.1806	-0.0482	-0.0373	-0.2845	-0.1780	-0.1840	-0.1683	-0.1814	-0.4286
		182	hcc86							-0.0727	0.1126				-0.1860
		183	hcc87												-0.1088
		184	hcc88							-0.1100					-0.0590
		185	hcc96					0.0966	0.0447						-0.1617
		186	hcc99												
		187	hcc100		-0.4052	-0.4270	-0.4065			-0.3411	-0.4253	-0.4905	-0.3891	-0.3904	-0.2084
		188	hcc103		-0.4304	-0.3310	-0.3320	-0.2143	-0.1436		-0.4121	-0.4708	-0.4054	-0.3428	0.0576
		189	hcc104		-0.1988						-0.1539		-0.1673		
		190	hcc106		-0.6090	-0.5298	-0.5617			-0.3773	-0.4312	-0.4800	-0.3128	-0.4886	-1.1894
		191	hcc107							-0.0778					
		192	hcc108		-0.1139						-0.0517	-0.0485		-0.0647	-0.1482

Risk Factor Group #	Risk Factor Group	Risk Factor #	Risk Factor Name	Excluded Category Indicator	Amb	Bathing	Bed Transfer	Bowel Incont	Conf	Dyspnea	Lower Dress	Upper Dress	Oral Meds	Toilet Transfer	DTC
		193	hcc110												
		194	hcc111		-0.1551	-0.1580	-0.1317		-0.0442	-0.4785	-0.1031	-0.1401	-0.1289	-0.1412	-0.2620
		195	hcc112		-0.1177					-0.5441		-0.1286	-0.1223		-0.2207
		196	hcc114		-0.1538	-0.1586	-0.1344				-0.1632	-0.1997	-0.2868	-0.1623	-0.0935
		197	hcc115												
		198	hcc122												
		199	hcc124											0.4038	
		200	hcc134		-0.7258	-0.6931	-0.7056	-0.5213	-0.3791	-0.5043	-0.6120	-0.6946	-0.6666	-0.7931	-0.7957
		201	hcc135							-0.0770					-0.3029
		202	hcc136		-0.5036	-0.4766	-0.4506	-0.2688	-0.1817	-0.2851	-0.3995	-0.4569	-0.4583	-0.4866	-0.6885
		203	hcc137		-0.0805	-0.1050	-0.1009			-0.1097	-0.1056	-0.1188	-0.0716	-0.0972	-0.4063
		204	hcc138												-0.1359
		205	hcc157		-0.6076	-0.4686	-0.6929	-0.4443		-0.3237	-0.5724	-0.5944	-0.3355	-0.7182	-0.7135
		206	hcc158		-0.2622	-0.1793	-0.3303				-0.2590	-0.2658	-0.1070	-0.2962	-0.4394
		207	hcc159		-0.1399		-0.1601				-0.1410	-0.1529		-0.1649	-0.0859
		208	hcc161		-0.3095	-0.3639	-0.3576			-0.3122	-0.3367	-0.3535	-0.1465	-0.3480	-0.7748
		209	hcc162												
		210	hcc166												
		211	hcc167						-0.2085				-0.2139		
		212	hcc169												
		213	hcc170		-0.2435										
		214	hcc173		-0.6830										
		215	hcc176						0.1824						-0.3216
		216	hcc186		0.3043		0.3267								-0.4329
		217	hcc188												-0.3375
		218	hcc189		-1.0179	-0.3925	-0.4743		-0.1812	-0.1797	-0.2367	-0.2507	-0.2396	-0.3591	-0.3610
32	CONSTANT	219	_CONS		0.9281	0.9135	2.0258	1.3833	0.5920	1.2072	1.8981	2.1937	0.9086	2.6705	2.0724

**Appendix Table 3: CMS-HCC Mapping**

Effective January 1, 2023

HCC LABEL	CC_HCC	CC_ZERO1	CC_ZERO2	CC_ZERO3	CC_ZERO4	CC_ZERO5
Neoplasm 1	8	9	10	11	12	
Neoplasm 2	9	10	11	12		
Neoplasm 3	10	11	12			
Neoplasm 4	11	12				
Diabetes 1	17	18	19			
Diabetes 2	18	19				
Liver 1	27	28	29	80		
Liver 2	28	29				
Blood 1	46	48				
Cognitive 2	51	52				
SUD 1	54	55	56			
SUD 2	55	56				
Psychiatric 1	57	58	59	60		
Psychiatric 2	58	59	60			
Psychiatric 3	59	60				
Spinal 1	70	71	72	103	104	169
Spinal 2	71	72	104	169		
Spinal 3	72	169				
Arrest 1	82	83	84			
Arrest 2	83	84				
Heart 2	86	87	88			
Heart 3	87	88				
CVD 1	99	100				
CVD 5	103	104				
Vascular 1	106	107	108	161	189	
Vascular 2	107	108				
Lung 1	110	111	112			
Lung 2	111	112				
Lung 5	114	115				
Kidney 3	134	135	136	137	138	
Kidney 4	135	136	137	138		
Kidney 5	136	137	138			
Kidney 6	137	138				
Skin 1	157	158	159	161		
Skin 2	158	159	161			
Skin 3	159	161				
Injury 1	166	80	167			

**Appendix Table 4: CMS-HCC Labels**

Effective January 1, 2023

HCC	Label
HCC1	HIV/AIDS
HCC2	Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock
HCC6	Opportunistic Infections
HCC8	Metastatic Cancer and Acute Leukemia
HCC9	Lung and Other Severe Cancers
HCC10	Lymphoma and Other Cancers
HCC11	Colorectal, Bladder, and Other Cancers
HCC12	Breast, Prostate, and Other Cancers and Tumors
HCC17	Diabetes with Acute Complications
HCC18	Diabetes with Chronic Complications
HCC19	Diabetes without Complication
HCC21	Protein-Calorie Malnutrition
HCC22	Morbid Obesity
HCC23	Other Significant Endocrine and Metabolic Disorders
HCC27	End-Stage Liver Disease
HCC28	Cirrhosis of Liver
HCC29	Chronic Hepatitis
HCC33	Intestinal Obstruction/Perforation
HCC34	Chronic Pancreatitis
HCC35	Inflammatory Bowel Disease
HCC39	Bone/Joint/Muscle Infections/Necrosis
HCC40	Rheumatoid Arthritis and Inflammatory Connective Tissue Disease
HCC46	Severe Hematological Disorders
HCC47	Disorders of Immunity
HCC48	Coagulation Defects and Other Specified Hematological Disorders
HCC51	Dementia With Complications
HCC52	Dementia Without Complication
HCC54	Substance Use with Psychotic Complications
HCC55	Substance Use Disorder, Moderate/Severe, or Substance Use with Complications
HCC56	Substance Use Disorder, Mild, Except Alcohol and Cannabis
HCC57	Schizophrenia
HCC58	Reactive and Unspecified Psychosis
HCC59	Major Depressive, Bipolar, and Paranoid Disorders
HCC60	Personality Disorders
HCC70	Quadriplegia
HCC71	Paraplegia
HCC72	Spinal Cord Disorders/Injuries
HCC73	Amyotrophic Lateral Sclerosis and Other Motor Neuron Disease
HCC74	Cerebral Palsy
HCC75	Myasthenia Gravis/Myoneural Disorders and Guillain-Barre Syndrome/Inflammatory and Toxic Neuropathy
HCC76	Muscular Dystrophy
HCC77	Multiple Sclerosis
HCC78	Parkinson's and Huntington's Diseases
HCC79	Seizure Disorders and Convulsions
HCC80	Coma, Brain Compression/Anoxic Damage
HCC82	Respirator Dependence/Tracheostomy Status
HCC83	Respiratory Arrest
HCC84	Cardio-Respiratory Failure and Shock
HCC85	Congestive Heart Failure
HCC86	Acute Myocardial Infarction
HCC87	Unstable Angina and Other Acute Ischemic Heart Disease
HCC88	Angina Pectoris
HCC96	Specified Heart Arrhythmias
HCC99	Intracranial Hemorrhage
HCC100	Ischemic or Unspecified Stroke
HCC103	Hemiplegia/Hemiparesis
HCC104	Monoplegia, Other Paralytic Syndromes
HCC106	Atherosclerosis of the Extremities with Ulceration or Gangrene
HCC107	Vascular Disease with Complications

HCC	Label
HCC108	Vascular Disease
HCC110	Cystic Fibrosis
HCC111	Chronic Obstructive Pulmonary Disease
HCC112	Fibrosis of Lung and Other Chronic Lung Disorders
HCC114	Aspiration and Specified Bacterial Pneumonias
HCC115	Pneumococcal Pneumonia, Empyema, Lung Abscess
HCC122	Proliferative Diabetic Retinopathy and Vitreous Hemorrhage
HCC124	Exudative Macular Degeneration
HCC134	Dialysis Status
HCC135	Acute Renal Failure
HCC136	Chronic Kidney Disease, Stage 5
HCC137	Chronic Kidney Disease, Severe (Stage 4)
HCC138	Chronic Kidney Disease, Moderate (Stage 3)
HCC157	Pressure Ulcer of Skin with Necrosis Through to Muscle, Tendon, or Bone
HCC158	Pressure Ulcer of Skin with Full Thickness Skin Loss
HCC159	Pressure Ulcer of Skin with Partial Thickness Skin Loss
HCC161	Chronic Ulcer of Skin, Except Pressure
HCC162	Severe Skin Burn or Condition
HCC166	Severe Head Injury
HCC167	Major Head Injury
HCC169	Vertebral Fractures without Spinal Cord Injury
HCC170	Hip Fracture/Dislocation
HCC173	Traumatic Amputations and Complications
HCC176	Complications of Specified Implanted Device or Graft
HCC186	Major Organ Transplant or Replacement Status
HCC188	Artificial Openings for Feeding or Elimination
HCC189	Amputation Status, Lower Limb/Amputation Complications