MDS 3.0 Quality Measures

USER'S MANUAL

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QUALITY MEASURES (QM) USER'S MANUAL

CONTENTS

Chapter 1

QM Sample and Record Selection Methodology

The purpose of this chapter is to describe the methodology that is used to select the short and long stay samples as well as the key records that are used to compute the QMs for each of those samples. The first section below will present definitions that are used to describe the selection methodology. The second section describes the selection of the two samples. The third and fourth sections describe the selection of the key records within each of the two samples.

The logic presented below depends upon the concepts of stays and episodes. Detailed specifications for the identification of stays and episodes are presented in Appendix C of this document.

Section 1: Definitions

Target period. The span of time that defines the QM reporting period (e.g., a calendar quarter).

Stay. The period of time between a resident's entry into a facility and either (a) a discharge, or (b) the end of the target period, whichever comes first. A stay is also defined as a set of contiguous days in a facility. The start of a stay is either:

- An admission entry (A0310F = [01] *and* A1700 = [1]), *or*
- A reentry (A0310F = [01] *and* A1700 = [2]).

The end of a stay is the earliest of the following:

- Any discharge assessment (A0310F = [10, 11]), *or*
- A death in facility tracking record (A0310F = [12]), *or*
- The end of the target period.

Episode. A period of time spanning one or more stays. An episode begins with an admission (defined below) and ends with either (a) a discharge, or (b) the end of the target period, whichever comes first. An episode starts with:

- An admission entry (A0310F = [01] *and* A1700 = [1]).

The end of an episode is the earliest of the following:

- A discharge assessment with return not anticipated (A0310F = [10]), *or*
- A discharge assessment with return anticipated (A0310F = [11]) but the resident did not return within 30 days of discharge, *or*
- A death in facility tracking record (A0310F = [12]), *or*
- The end of the target period.

Admission. An admission entry record (A0310F = [01] *and* A1700 = [1]) is required when *any one* of the following occurs:

- Resident has never been admitted to this facility before; *or*
- Resident has been in this facility previously and was discharged return not anticipated; *or*
- Resident has been in this facility previously and was discharged return anticipated and did not return within 30 days of discharge.

Reentry. A reentry record (A0310F = [01] and A1700 = [2]) is required when *all of the following* occurred prior to this entry, the resident was:

- Discharged return anticipated, *and*
- Returned to facility within 30 days of discharge.

Cumulative days in facility (CDIF). The total number of days within an episode during which the resident was in the facility. It is the sum of the number of days within each stay included in an episode. If an episode consists of more than one stay separated by periods of time outside the facility (e.g., hospitalizations), only those days within the facility would count towards CDIF. Any days outside of the facility (e.g., hospital, home, etc.) would not count towards the CDIF total. The following rules are used when computing CDIF:

- When counting the number of days until the end of the episode, counting stops with (a) the last record in the target period if that record is a discharge assessment (A0310F = [10, 11]), (b) the last record in the target period if that record is a death in facility (A0310F = [12]), *or* (c) the end of the target period is reached, whichever is earlier.
- When counting the duration of each stay within an episode, include the day of entry (A1600) but not the day of discharge (A2000) unless the entry and discharge occurred on the same day in which case the number of days in the stay is equal to 1.
- While death in facility records (A0310F = [12]) end CDIF counting, these records are not used as target records because they contain only tracking information and do not include clinical information necessary for QM calculation.
- **Special rules for influenza vaccination measures.** Influenza vaccination measures are calculated only once per 12-month influenza season, which begins July 1 of a given year and ends on June 30 of the subsequent year. For these measures, the target period begins on October 1 and ends on March 31. This means that the end-of-episode date will be March 31 for an episode that is ongoing at the end of the influenza season and that March 31 should be used as the end date when computing CDIF and for classifying stays as long or short for the influenza vaccination measures.
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Short stay. An episode with CDIF less than or equal to 100 days as of the end of the target period.

Long stay. An episode with CDIF greater than or equal to 101 days as of the end of the target period.

Target date. The event date for an MDS record, defined as follows:

- For an entry record (A0310F = [01]), the target date is equal to the entry date (A1600).
- For a discharge record (A0310F = [10, 11]) *or* death-in-facility record (A0310F = [12]), the target date is equal to the discharge date (A2000).
- For all other records, the target date is equal to the assessment reference date (A2300).

Section 2: Selecting the QM Samples

Two resident samples are selected for computing the QMs: a short-stay sample and a long-stay sample. These samples are selected using the following steps:

1. Select all residents whose latest episode either ends during the target period or is ongoing at the end of the target period. This latest episode is selected for QM calculation.

2. For each episode that is selected, compute the cumulative days in the facility (CDIF).

3. If the CDIF is less than or equal to 100 days, the resident is included in the short-stay sample.

4. If the CDIF is greater than or equal to 101 days, the resident is included in the long-stay sample.

Note that all residents who are selected in Step 1 above will be placed in either the short- or long-stay sample and that the two samples are mutually exclusive. If a resident has multiple episodes within the target period, only the latest episode is used.

Within each sample, certain key records are identified which are used for calculating individual measures. These records are defined in the following sections.

Section 3: Short Stay Record Definitions

ASSESSMENT SELECTED	PROPERTY	SELECTION SPECIFICATIONS
Target assessment	Selection period	Most recent 6 months (the short stay target period).
	Qualifying RFAs[1]	A0310A = [01, 02, 03, 04, 05, 06] *or* A0310B = [01, 02, 03, 04, 05, 06] *or* A0310F = [10, 11]
	Selection logic	Latest assessment that meets the following criteria: (a) it is contained within the resident's selected episode, (b) it has a qualifying RFA, and (c) its target date is no more than 120 days[2] before the end of the episode.
	Rationale	Records with a qualifying RFA contain all of the items needed to define the QMs. The target assessment need not have a target date within the target period, but it must occur within 120 days before the end of the resident's selected episode (either the target date of a discharge assessment or death in facility record that is the last record in the target period or the end of the target period if the episode is ongoing). 120 days allows 93 days between quarterly assessments plus an additional 27 days to allow for late assessments. The target assessment represents the resident's status at the end of the episode.
Initial assessment	Selection period	First assessment following the admission entry record at the beginning of the resident's selected episode.
	Qualifying RFAs	A0310A = [01] *or* A0310B = [01, 06] *or* A0310F = [10, 11]
	Selection logic	Earliest assessment that meets the following criteria: (a) it is contained within the resident's selected episode, (b) it has a qualifying RFA, (c) it has the earliest target date that is greater than or equal to the admission entry date starting the episode, and (d) its target date is no more than 130 days prior to the target date of the target record. The initial assessment cannot be the same as the target assessment. If the same assessment qualifies as both the initial and target assessments, it is used as the target assessment and the initial assessment is considered to be missing.
	Rationale	Records with a qualifying RFA contain all of the items needed to define the QMs. The initial assessment need not have a target date within the target period. The initial assessment represents the resident's status as soon as possible after the admission that marks the beginning of the episode. If the initial assessment is more than 130 days prior to the target assessment, it is not used and the initial record is considered to be missing. This prevents the use of an initial assessment for a short stay in which a large portion of the resident's episode was spent outside the facility. 130 days allows for as many as 30 days of a 100-day stay to occur outside of the facility.

(continued)

Short Stay Record Definitions (continued)

ASSESSMENT SELECTED	PROPERTY	SELECTION SPECIFICATIONS
Look-back Scan	Selection period	Scan all assessments within the current episode.
	Qualifying RFAs	A0310A = [01, 02, 03, 04, 05, 06] *or* A0310B = [01, 02, 03, 04, 05, 06] *or* A0310F = [10, 11]
	Selection logic	Include the target assessment and qualifying earlier assessments in the scan. Include an earlier assessment in the scan if it meets all of the following conditions: (a) it is contained within the resident's episode, (b) it has a qualifying RFA, and (c) its target date is on or before the target date for the target assessment. The target assessment and qualifying earlier assessments are scanned to determine whether certain events or conditions occurred during the look-back period. These events and conditions are specified in the definitions of measures that utilize the look-back scan.
	Rationale	Some measures utilize MDS items that record events or conditions that occurred since the prior assessment was performed. The purpose of the look-back scan is to determine whether such events or conditions occurred during the look-back period. All assessments with target dates within the episode are examined to determine whether the event or condition of interest occurred at any time during the episode.
Influenza vaccination assessment	Selection period	Scan all assessments with target dates on or after October 1 of the most recently completed influenza season.
	Qualifying RFAs	A0310A = [01, 02, 03, 04, 05, 06] *or* A0310B = [01, 02, 03, 04, 05, 06] *or* A0310F = [10, 11]
	Selection logic	Select the record with the latest target date that meets all of the following conditions: a) It has a qualifying RFA, *and* b) Target date is on or after October 1st of the most recently completed influenza season, *and* c) A1600 (entry date) is on or before March 31st of the most recently completed influenza season.
	Rationale	The selection logic defined above is intended to identify the latest assessment that reports the influenza vaccine status for a resident who was in the facility for at least one day from October 1 through March 31.

NOTES:

[1] RFA: reason for assessment.

[2] A short stay episode can span more than 100 calendar days because days outside of the facility are not counted in defining a 100-day or less short stay episode.

Section 4: Long Stay Record Definitions

ASSESSMENT SELECTED	PROPERTY	SELECTION SPECIFICATIONS
Target assessment	Selection period	Most recent 3 months (the long stay target period).
	Qualifying RFAs	A0310A = [01, 02, 03, 04, 05, 06] *or* A0310B = [01, 02, 03, 04, 05, 06] *or* A0310F = [10, 11]
	Selection logic	Latest assessment that meets the following criteria: (a) it is contained within the resident's selected episode, (b) it has a qualifying RFA, and (c) its target date is no more than 120 before the end of the episode.
	Rationale	Records with a qualifying RFA contain all of the items needed to define the QMs. The target assessment need not have a target date within the target period, but it must occur within 120 days of the end of the resident's episode (either the last discharge in the target period or the end of the target period if the episode is ongoing). 120 days allows 93 days between quarterly assessments plus an additional 27 days to allow for late assessments. The target assessment represents the resident's status at the end of the episode.
Prior assessment	Selection period	Latest assessment that is 46 to 165 days before the target assessment.
	Qualifying RFAs	A0310A = [01, 02, 03, 04, 05, 06] *or* A0310B = [01, 02, 03, 04, 05, 06] *or* A0310F = [10, 11]
	Selection logic	Latest assessment that meets the following criteria: (a) it is contained within the resident's episode, (b) it has a qualifying RFA, and (c) its target date is contained in the window that is 46 days to 165 days preceding the target date of the target assessment. If no qualifying assessment exists, the prior assessment is considered missing.
	Rationale	Records with a qualifying RFA contain all of the items needed to define the QMs. The prior assessment need not have a target date within the target period, but it must occur within the defined window. The window covers 120 days, which allows 93 days between quarterly assessments plus an additional 27 days to allow for late assessments. Requiring a 45 day gap between the prior assessment and the target assessment insures that the gap between the prior and target assessment will not be small (gaps of 45 days or less are excluded).

Long Stay Record Definitions (continued)

ASSESSMENT SELECTED	PROPERTY	SELECTION SPECIFICATIONS
Look-back Scan	Selection period	Scan all assessments within the current episode that have target dates no more than 275 days prior to the target assessment.
	Qualifying RFAs	A0310A = [01, 02, 03, 04, 05, 06] *or* A0310B = [01, 02, 03, 04, 05, 06] *or* A0310F = [10, 11]
	Selection logic	Include the target assessment and all qualifying earlier assessments in the scan. Include an earlier assessment in the scan if it meets all of the following conditions: (a) it is contained within the resident's episode, (b) it has a qualifying RFA, (c) its target date is on or before the target date for the target assessment, and (d) its target date is no more than 275 days prior to the target date of the target assessment. The target assessment and qualifying earlier assessments are scanned to determine whether certain events or conditions occurred during the look-back period. These events and conditions are specified in the definitions of measures that utilize the look-back scan.
	Rationale	Some measures utilize MDS items that record events or conditions that occurred since the prior assessment was performed. The purpose of the look-back scan is to determine whether such events or conditions occurred during the look-back period. These measures trigger if the event or condition of interest occurred any time during a one year period. A 275 day time period is used to include up to three quarterly OBRA assessments. The earliest of these assessments would have a look-back period of up to 93 days which would cover a total of about one year. All assessments with target dates in this time period are examined to determine whether the event or condition of interest occurred at any time during the time interval.

(continued)

Long Stay Record Definitions (continued)

ASSESSMENT SELECTED	PROPERTY	SELECTION SPECIFICATIONS
Influenza vaccination assessment	Selection period	Scan all assessments with target dates on or after October 1 of the most recently completed influenza season.
	Qualifying RFAs	A0310A = [01, 02, 03, 04, 05, 06] *or* A0310B = [01, 02, 03, 04, 05, 06] *or* A0310F = [10, 11]

	Selection logic	Select the record with the latest target date that meets all of the following conditions:
		    a) It has a qualifying RFA, *and*
		    b) Target date is on or after October 1st of the most recently completed influenza season, *and*
		    c) A1600 (entry date) is on or before March 31st of the most recently completed influenza season.

	Rationale	The selection logic defined above is intended to identify the latest assessment that reports the influenza vaccine status for a resident who was in the facility for at least one day from October 1 through March 31.

Chapter 2

MDS 3.0 Quality Measures Logical Specifications

Section 1: Short Stay Quality Measures

MDS 3.0 Measure: Percent of Residents Who Self-Report Moderate to Severe Pain (Short Stay)[1]

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

CMS: N001.01
NQF: 0676
 	
This measure captures the percent of short stay residents, with at least one episode of moderate/severe pain or horrible/excruciating pain of any frequency, in the last 5 days.
	Numerator
	Short-stay residents with a selected target assessment where the target assessment meets *either* or *both* of the following two conditions:
	1. Condition #1: resident reports daily pain with at least one episode of moderate/severe pain. *Both* of the following conditions must be met:
	   1.1. Almost constant or frequent pain (J0400=[1,2]) *and*
	   1.2. At least one episode of moderate to severe pain (J0600A = [05, 06, 07, 08, 09] *or* J0600B = [2, 3]).
	2. Condition #2: resident reports very severe/horrible pain of any frequency (J0600A = [10] *or* J0600B = [4]).
	
	Denominator
	All short-stay residents with a selected target assessment, except those with exclusions.
	
	Exclusions
	If the resident is not included in the numerator (the resident did not meet the pain symptom conditions for the numerator) *and any* of the following conditions are true:
	1. The pain assessment interview was not completed (J0200= [0, - , ^]).
	2. The pain presence item was not completed (J0300 = [9, - , ^]).
	3. For residents with pain or hurting at any time in the last 5 days (J0300 = [1]), *any* of the following are true:
	   3.1. The pain frequency item was not completed (J0400 = [9, - , ^]).
	   3.2. Neither of the pain intensity items was completed (J0600A = [99, - , ^] and J0600B= [9, - ,, ^]).
	   3.3. The numeric pain intensity item indicates no pain (J0600A = [00]).
		Not applicable.

NOTE:

[1] This measure is used in the Five-Star Quality Rating System.

MDS 3.0 Measure: Percent of Residents With Pressure Ulcers That Are New or Worsened (Short Stay)[1]

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

CMS: N002.02
NQF: 0678
 	
This measure captures the percentage of short-stay residents with new or worsening Stage II-IV pressure ulcers.
	Numerator
	Short-stay residents for which a look-back scan indicates one or more new or worsening Stage II-IV pressure ulcers
	Where on any assessment in the look-back scan:
	  1. Stage II (M0800A) >[0] *or*
	  2. Stage III (M0800B >[0] *or*
	  3. Stage IV (M0800C >[0].
	Denominator
	All residents with one or more assessments that are eligible for a look-back scan, except those with exclusions.
	Exclusions
	  1. Residents are excluded if none of the assessments that are included in the look-back scan has a usable response for M0800A, M0800B, or M0800C. This situation is identified as follows:
	    1.1 If none of M0800A, M0800B, or M0800C > [0] and any one of these items is missing [-], then the assessment is not usable and is discarded.
	    1.2 If all of the assessments that are eligible for the look-back scan are discarded and no usable assessments remain, then the resident is excluded from the numerator and the denominator.
	  2. Resident is excluded if there is no initial assessment available to derive data for risk adjustment (covariates).
		1. Indicator of requiring limited or more assistance in bed mobility self-performance on the initial assessment:
		Covariate = [1] if (G0110A1 = [2, 3, 4, 7, 8])
		Covariate = [0] if (G0110A1 = [0, 1, -])
		2. Indicator of bowel incontinence at least occasionally on the initial assessment:
		Covariate = [1] if (H0400 = [1, 2, 3])
		Covariate = [0] if (H0400 = [0, 9, - , ^])
		3. Have diabetes or peripheral vascular disease on initial assessment:
		Covariate = [1] if *any* of the following are true:
		3.1. (I0900 = [1]) (checked)
		3.2. (I2900 = [1]) (checked)
		3.3. I8000A through I8000J contains *any* of the following peripheral vascular disease diagnosis codes: [250.7, 440.20, 440.21, 440.22, 440.23, 440.24, 440.29, 440.31, 440.32, 443.81, 443.9].
		Covariate = [0] if (I0900 = [0, -[2]]) *and* (I2900 = [0, -]) *and* I8000A through I8000J do not contain *any* of the peripheral vascular disease diagnosis codes listed above.

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
		4. Indicator of Low Body Mass Index, based on Height (K0200A) and Weight (K0200B) on the initial assessment: Covariate = [1] if BMI ≥ [12.0] **and** ≤ [19.0] Covariate = [0] if BMI has a value which is less than 12.0 or greater than 19.0 or if BMI cannot be computed because (K0200A = [0, -]) or (K0200B = [0, -]) Where: BMI = (weight * 703 / height^2) = ((K0200B) * 703) / (K0200A^2) and the resulting value is rounded to one decimal. 5. All covariates are missing if no initial assessment is available.

NOTES:

[1] This measure is used in the Five-Star Quality Rating System.

[2] Item I0900 can be "missing" on assessments with target dates prior to 4/1/2012 where the item subset code is equal to NP or NQ. The item was not active on those assessments.

MDS 3.0 Measure: Percent of Residents Who Were Assessed and Appropriately Given the Seasonal Influenza Vaccine (Short Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N003.02 NQF: 0680 **The measure reports the percent of short-stay residents who are given, appropriately, the influenza vaccination during the most recent influenza season.**	*Numerator* Residents meeting any of the following criteria on the selected influenza vaccination assessment: 1. Resident received the influenza vaccine during the most recent influenza season, either in the facility (O0250A = [1]) *or* outside the facility (O0250C = [2]); *or* 2. Resident was offered and declined the influenza vaccine (O0250C = [4]); *or* 3. Resident was ineligible due to contraindication(s) (O0250C = [3]) (e.g., anaphylactic hypersensitivity to eggs or other components of the vaccine, history of Guillain-Barre Syndrome within 6 weeks after a previous influenza vaccination, bone marrow transplant within the past 6 months). *Denominator* All short-stay residents with a selected influenza vaccination assessment, except those with exclusions. *Exclusions* Resident's age on target date of selected target assessment is 179 days or less. *Notes* This measure is only calculated once per 12-month influenza season which begins on July 1 of a given year and ends on June 30 of the subsequent year, and reports data for residents who were in the facility for at least one day during the target period of October 1 through March 31	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Received the Seasonal Influenza Vaccine (Short Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N004.02 NQF: 0680A **The measure reports the percent of short-stay residents who received the influenza vaccination during the most recent influenza season.**	*Numerator* Residents meeting the following criteria on the selected influenza vaccination assessment: 1. Resident received the influenza vaccine during the most recent influenza season, either in the facility (O0250A = [1]) *or* outside the facility (O0250C = [2]). *Denominator* All short-stay residents with a selected influenza vaccination assessment, except those with exclusions. *Exclusions* 1. Resident's age on target date of selected influenza vaccination assessment is 179 days or less. *Notes* This measure is only calculated once per 12-month influenza season which begins on July 1 of a given year and ends on June 30 of the subsequent year and reports data for residents who were in the facility for at least one day during the target period of October 1 through March 31.	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Were Offered and Declined the Seasonal Influenza Vaccine (Short Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N005.02 NQF: 0680B **The measure reports the percent of short-stay residents who are offered and declined the influenza vaccination during the most recent influenza season.**	*Numerator* Residents meeting the following criteria on the selected influenza vaccination assessment: 1. Resident was offered and declined the influenza vaccine during the most recent influenza season (O0250C = [4]). *Denominator* All short-stay residents with a selected influenza vaccination assessment, except those with exclusions. *Exclusions* 1. Resident's age on target date of selected influenza vaccination assessment is 179 days or less. *Notes* This measure is only calculated once per 12-month influenza season which begins on July 1 of a given year and ends on June 30 of the subsequent year and reports data for residents who were in the facility for at least one day during the target period of October 1 through March 31.	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Did Not Receive, Due to Medical Contraindication, the Seasonal Influenza Vaccine (Short Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N006.02 NQF: 0680C **The measure reports the percent of short-stay residents who did not receive, due to medical contraindication, the influenza vaccination during the most recent influenza season.**	*Numerator* Residents meeting the following criteria on the selected influenza vaccination assessment: 1. Resident was ineligible for the influenza vaccine during the most recent influenza season due to contraindication(s) (O0250C = [3]) (e.g., anaphylactic hypersensitivity to eggs or other components of the vaccine, history of Guillian-Barré Syndrome within 6 weeks after a previous influenza vaccination, bone marrow transplant within the past 6 months). *Denominator* All short-stay residents with a selected influenza vaccination assessment, except those with exclusions. *Exclusions* 1. Resident's age on target date of selected influenza vaccination assessment is 179 days or less. *Notes* This measure is only calculated once per 12-month influenza season which begins on July 1 of a given year and ends on June 30 of the subsequent year and reports data for residents who were in the facility for at least one day during the target period of October 1 through March 31	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Newly Received an Antipsychotic Medication (Short Stay)[1,2]

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N011.01 NQF: none **This measure reports the percentage of short-stay residents who are receiving an antipsychotic medication during the target period but not on their initial assessment.**	**Numerator** Short-stay residents for whom one or more assessments in a look-back scan (*not including* the initial assessment) indicates that antipsychotic medication was received: 1. For assessments with target dates on or before 03/31/2012: (N0400A = [1]). 2. For assessments with target dates on or after 04/01/2012: (N0410A = [1, 2, 3, 4, 5, 6, 7]). Note that residents are excluded from this measure if their initial assessment indicates antipsychotic medication use or if antipsychotic medication use is unknown on the initial assessment (see exclusion #3, below). **Denominator** All short-stay residents who do not have exclusions and who meet all of the following conditions: 1. The resident has a target assessment, *and* 2. The resident has an initial assessment, *and* 3. The target assessment is not the same as the initial assessment. **Exclusions** 1. The following is true for *all* assessments in the look-back scan (excluding the initial assessment): 　1.1. For assessments with target dates on or before 03/31/2012: (N0400A = [-]). 　1.2. For assessments with target dates on or after 04/01/2012: (N0410A = [-]). 2. *Any* of the following related conditions are present on *any* assessment in a look-back scan: 　2.1. Schizophrenia (I6000 = [1]). 　2.2. Tourette's syndrome (I5350 = [1]). 　2.3. Huntington's disease (I5250 = [1]). 3. The resident's initial assessment indicates antipsychotic medication use or antipsychotic medication use is unknown: 　3.1. For initial assessments with target dates on or before 03/31/2012: (N0400A = [1, -]). 　3.2. For initial assessments with target dates on or after 04/01/2012: (N0410A = [1, 2, 3, 4, 5, 6, 7, -]).	Not applicable.

NOTES:

[1] This measure has not been submitted to NQF for endorsement.

[2] This measure is used in the Five-Star Quality Rating System.

MDS 3.0 Measure: Percent of Residents Who Made Improvements in Function (Short Stay)[1,2]

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

CMS: N037.02
 NQF: none
 	
 This measure reports the percentage of short-stay residents who were discharged from the nursing home that gained more independence in transfer, locomotion, and walking during their episodes of care.
	NOTE:
	 1. A "valid preceding 5-day assessment or admission assessment" refers to the date of the earliest assessment if a resident has both 5-day (A0310B = [01]) and admission assessments (A0310A = [01]).
	 2. A "valid discharge assessment" refers to a discharge assessment with a date closest to the valid preceding 5-day or admission assessment where a return is not anticipated (A0310F = [10]).
	 3. The 5-day or admission assessment should be used to calculate the tercile cutoffs. If resident has both a 5-day and an admission assessment, calculate covariate using the assessment with the earlier date. Terciles are recalculated in each quarter.
	
	 Numerator
	 Short-stay residents who:
	 1. Have a valid discharge assessment (A0310F = [10]) ***and*** a valid preceding 5-day assessment or admission assessment; ***and***
	 2. Have a change in performance score that is negative ([valid discharge assessment] - [valid preceding 5-day or admission assessment] < [0]).
	
	 Performance is calculated as the sum of G0110B1 (transfer: self-performance), G0110E1 (locomotion on unit: self-performance), and G0110D1 (walk in corridor: self-performance), with 7's (activity occurred only once or twice) and 8's (activity did not occur) recoded to 4's (total dependence).
	
	 Denominator
	 Short-stay residents who meet all of the following conditions, except those with exclusions:
	 1. Have a valid discharge assessment (A0310F = [10]), ***and***
	 2. Have a valid preceding 5-day assessment (A0310B = [01]) ***or*** admission assessment (A0310A = [01]).
		All covariates used throughout this measure are calculated using the valid preceding 5-day assessment or admission assessment described in the NOTE at the top of the measure specifications.
		
		 1. Age on the 5-day or admission assessment as calculated by subtracting date of birth (A0900) from the date of assessment (A2300)
		
		 If (MONTH(A2300) > MONTH(A0900)) ***or*** (MONTH(A2300) = MONTH(A0900) ***and*** DAY(A2300) >= DAY(A0900)) ***then***
		 Age = YEAR(A2300)-YEAR(A0900)
		 else
		 Age = YEAR(A2300)-YEAR(A0900)-1
		
		 1.1 Covariate Age Category<54 = 1 if Age =<54 ***and*** Covariate Age Category<54 = 0 if Age >54)
		
		 1.2 Covariate Age Category 54 to 84 = 1 if Age >54 ***and*** <=84 and Covariate Age Category 54 to 84 = 0 if Age <=54 or Age > 84) (reference)
		
		 1.3 Covariate Age Category >84 = 1 if Age >84 ***and*** Covariate Age Category >84 = 0 if Age <=84)

(continued)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

	Exclusions
	1. Residents satisfying any of the following conditions:
	  1.1. Comatose (B0100 = [1]) on the 5-day or admission assessment, whichever was used in the QM.
	  1.2. Life expectancy of less than 6 months (J1400 = [1]) on the 5-day or admission assessment, whichever was used in the QM.
	  1.3. Hospice (O0100K2 = [1]) on the 5-day or admission assessment, whichever was used in the QM.
	  1.4. Residents with G0110B1, G0110D1, or G0110E1 missing on any of the assessments used to calculate the QM (i.e., discharge assessment, and 5-day or admission assessment, whichever was used in the QM).
	  1.5. Residents with no impairment (sum of G0110B1, G0110D1 and G0110E1 = [0]) on the 5-day or admission assessment, whichever was used in the QM.
	  1.6. Residents with an unplanned discharge on any assessment during the care episode (A0310G = [2])
		2. Gender
		  2.1 Covariate = 1 if (A0800 = [2]) (Female)
		  2.2 Covariate = 0 if (A0800 = [1]) (Male)
		3. Severe cognitive impairment
		  3.1 Covariate = 1 if (C1000 = [3] ***and*** C0700 = [1]) ***or*** BIMS summary score (C0500) $\leq$ [7]
		  3.2 Covariate = 0 if either of the following criteria are met:
		    3.2.1 (C1000 = [0, 1, 2] ***or*** C0700 = [0]) ***and*** (C0500 = [>7, ^, -, 99])
		    3.2.2 (C0500 > [7]) ***and*** (C1000 = [0, 1, 2, ^, -] ***or*** C0700 = [0, ^, -])
		  3.3 If Covariate has not been set to 1 or 0 based on logic in 3.1 and 3.2, then Covariate = [0].
		4. Long Form ADL (LFADL) Scale (G0110A1 + G0110B1 + G0110E1 + G0110G1 + G0110H1 + G0110I1 + G0110JI)
		  4.1 Covariate = 0 if LFADL = (middle tercile[3] or highest tercile) ***or*** if any (G0110A1, G0110B1, G0110E1, G0110G1, G0110H1, G0110I1, G0110J1) = [-]
		  Covariate = 1 if LFADL = lowest tercile

(continued)

MDS 3.0 Measure: Percent of Residents Who Made Improvements in Function (Short Stay)[1,2] (continued)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
		4.2 Covariate =0 if (lowest tercile *or* highest tercile) Covariate = 1 if LFADL = middle tercile (reference) 4.3 Covariate =0 if (lowest tercile *or* middle tercile) 5. Covariate = 1 if LFADL = highest tercile 6. Heart failure 6.1 Covariate = 1 if (I0600 = [1]) 6.2 Covariate = 0 if (I0600 = [0, -]) 7. CVA, TIA, or Stroke 7.1 Covariate = 1 if (I4500 = [1]) 8. Covariate = 0 if (I4500 = [0, -]) 9. Hip Fracture 9.1 Covariate = 1 if (I3900 = [1]) 9.2 Covariate = 0 if (I3900 = [0, -]) 10. Other Fracture 10.1 Covariate = 1 if (I4000 = [1]) 10.2 Covariate = 0 if (I4000 = [0, -])

NOTES:

[1] This measure has not been submitted to NQF for endorsement.

[2] This measure is used in the Five-Star Quality Rating System.

[3] Long Form ADL Scale terciles are recalculated in each quarter using the 5-day or admission assessment.

Section 2: Long Stay Quality Measures

MDS 3.0 Measure: Percent of Residents Experiencing One or More Falls with Major Injury (Long Stay)[1]

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N013.01 NQF: 0674 **This measure reports the percent of long-stay residents who have experienced one or more falls with major injury reported in the target period or look-back period.**	*Numerator* Long-stay residents with one or more look-back scan assessments that indicate one or more falls that resulted in major injury (J1900C = [1, 2]). *Denominator* All long-stay nursing home residents with a one or more look-back scan assessments except those with exclusions. *Exclusions* Resident is excluded if one of the following is true for ***all*** of the look-back scan assessments: 1. The occurrence of falls was not assessed (J1800 = [-]), ***or*** 2. The assessment indicates that a fall occurred (J1800 = [1]) ***and*** the number of falls with major injury was not assessed (J1900C = [-]).	Not applicable.

NOTE:

[1] This measure is used in the Five-Star Quality Rating System.

MDS 3.0 Measure: Percent of Residents Who Self-Report Moderate to Severe Pain (Long Stay)[1]

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

CMS: N014.02
NQF: 0677
 	
This measure captures the percent of long-stay residents who report either (1) almost constant or frequent moderate to severe pain in the last 5 days or (2) any very severe/horrible in the last 5 days.
	Numerator
	Long-stay residents with a selected target assessment where the target assessment meets *either* or *both* of the following two conditions:
	1. Condition #1: resident report almost constant or frequent moderate to severe pain in the last 5 days. *Both* of the following conditions must be met:
	   1.1. Almost constant or frequent pain (J0400 = [1, 2]), *and*
	   1.2. At least one episode of moderate to severe pain: (J0600A = [05, 06, 07, 08, 09] *or* J600B = [2, 3]).
	2. Condition #2: resident reports very severe/horrible pain of any frequency (J0600A = [10] *or* J0600B = [4]).
	
	Denominator
	All long-stay residents with a selected target assessment, except those with exclusions.
	
	Exclusions
	1. The target assessment is an admission assessment, a PPS 5-day assessment, *or* a PPS readmission/return assessment (A0310A = [01] *or* A0310B = [01, 06]).
	2. The resident is not included in the numerator (the resident did not meet the pain symptom conditions for the numerator) *and* any of the following conditions are true:
	   2.1. The pain assessment interview was not completed (J0200 = [0, -, ^]).
	   2.2. The pain presence item was not completed (J0300 = [9, -, ^]).
	   2.3. For residents with pain or hurting at any time in the last 5 days (J0300 = [1]), *any* of the following are true:
	      2.3.1. The pain frequency item was not completed (J0400 = [9, -, ^]).
	      2.3.2. Neither of the pain intensity items was completed (J0600A = [99, -, ^] *and* J0600B = [9, -. ^]).
	      2.3.3. The numeric pain intensity item indicates no pain (J0600A = [00]).
		Independence or modified independence in daily decision making on the prior assessment
		
		Covariate = 1 if (C1000 = [0, 1] *or* if C0500 ≥ [13] and C0500 ≤ [15]).
		
		Covariate = 0 if *any* of the following is true:
		1. (C1000 = [2, 3]) *or*
		2. (C0500 ≥ [00] *and* C0500 ≤ [12]) *or*
		3. (C0500 = [99, -, ^] *and* C1000 = [-, ^]).
		All covariates are missing if no prior assessment is available.

NOTE:

[1] This measure is used in the Five-Star Quality Rating System.

MDS 3.0 Measure: Percent of High-Risk Residents With Pressure Ulcers (Long Stay)[1]

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N015.01 **NQF: 0679** **This measure captures the percentage of long-stay, high-risk residents with Stage II-IV pressure ulcers.**	*Numerator* All long-stay residents with a selected target assessment that meets ***both*** of the following conditions: 1. Condition #1: There is a high risk for pressure ulcers, where "high-risk" is defined in the denominator definition below. 2. Condition #2: Stage II-IV or unstageable pressure ulcers are present, as indicated by ***any*** of the following six conditions: 2.1 (M0300B1 = [1, 2, 3, 4, 5, 6, 7, 8, 9]) ***or*** 2.2 (M0300C1 = [1, 2, 3, 4, 5, 6, 7, 8, 9]) ***or*** 2.3 (M0300D1 = [1, 2, 3, 4, 5, 6, 7, 8, 9]). *Denominator* All long-stay residents with a selected target assessment who meet the definition of high risk, except those with exclusions. Residents are defined as high-risk if they meet ***one or more*** of the following three criteria on the target assessment: 1. Impaired bed mobility or transfer indicated, by ***either or both*** of the following: 1.1 Bed mobility, self-performance (G0110A1 = [3, 4, 7, 8]). 1.2 Transfer, self-performance (G0110B1 = [3, 4, 7, 8]). 2. Comatose (B0100 = [1]). 3. Malnutrition or at risk of malnutrition (I5600 = [1]) (checked). *Exclusions* 1. Target assessment is an admission assessment (A0310A = [01]) ***or*** a PPS 5-day or readmission/return assessment (A0310B = [01, 06]). 2. If the resident is not included in the numerator (the resident did not meet the pressure ulcer conditions for the numerator) ***and any*** of the following conditions are true: 2.1 (M0300B1 = [-]). 2.2 (M0300C1 = [-]). 2.3 (M0300D1 = [-]).	Not applicable.

NOTE: [1]This measure is used in the Five-Star Quality Rating System.

MDS 3.0 Measure: Percent of Residents Assessed and Appropriately Given the Seasonal Influenza Vaccine (Long Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N016.02 NQF: 0681 **The measure reports the percent of long-stay residents who are given, appropriately, the influenza vaccination during the most recent influenza season.**	*Numerator* Residents meeting **any** of the following criteria on the selected influenza vaccination assessment: 1. Resident received the influenza vaccine during the most recent influenza season, either in the facility (O0250A= [1]) *or* outside the facility (O0250C = [2]); *or* 2. Resident was offered and declined the influenza vaccine (O0250C = [4]); *or* 3. Resident was ineligible due to contraindication(s) (O0250C = [3]) (e.g., anaphylactic hypersensitivity to eggs or other components of the vaccine, history of Guillain-Barre Syndrome within 6 weeks after a previous influenza vaccination, bone marrow transplant within the past 6 months). *Denominator* All long-stay residents with a selected influenza vaccination assessment, except those with exclusions. *Exclusions* Resident's age on target date of selected influenza vaccination assessment is 179 days or less. *Notes* This measure is only calculated once per 12-month influenza season which begins on July 1 of a given year and ends on June 30 of the subsequent year and reports data for residents who were in the facility for at least one day during the target period of October 1 through March 31.	Not applicable.

**MDS 3.0 Measure: Percent of Residents Who Received
the Seasonal Influenza Vaccine (Long Stay)**

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N017.02 NQF: 0681A **The measure reports the percent of long-stay residents who received the influenza vaccination during the most recent influenza season.**	*Numerator* Residents meeting the following criteria on the selected influenza vaccination assessment: 1. Resident received the influenza vaccine during the most recent influenza season, either in the facility (O0250A = [1]) *or* outside the facility (O0250C = [2]). *Denominator* All long-stay residents with a selected influenza vaccination assessment, except those with exclusions. *Exclusions* Resident's age on target date of selected influenza vaccination assessment is 179 days or less. *Notes* This measure is only calculated once per 12-month influenza season which begins on July 1 of a given year and ends on June 30 of the subsequent year and reports data for residents who were in the facility for at least one day during the target period of October 1 through March 31.	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Were Offered and Declined the Seasonal Influenza Vaccine (Long Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N018.02 NQF: 0681B **The measure reports the percent of long-stay residents who are offered and declined the influenza vaccination during the most recent influenza season.**	*Numerator* Residents meeting the following criteria on the selected influenza vaccination assessment: 1. Resident was offered and declined the influenza vaccine during the most recent influenza season (O0250C = [4]). *Denominator* All long-stay residents with a selected influenza vaccination assessment, except those with exclusions. *Exclusions* Resident's age on target date of selected influenza vaccination assessment is 179 days or less. *Notes* This measure is only calculated once per 12-month influenza season which begins on July 1 of a given year and ends on June 30 of the subsequent year and reports data for residents who were in the facility for at least one day during the target period of October 1 through March 31.	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Did Not Receive, Due to Medical Contraindication, the Seasonal Influenza Vaccine (Long Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N019.02 NQF: 0681C **The measure reports the percent of long-stay residents who did not receive, due to medical contraindication, the influenza vaccination during the most recent influenza season.**	*Numerator* Residents meeting the following criteria on the selected influenza vaccination assessment: 1. Resident was ineligible for the influenza vaccine during the most recent influenza season due to contraindication(s) (O0250C = [3]) (e.g., anaphylactic hypersensitivity to eggs or other components of the vaccine, history of Guillian-Barré Syndrome within 6 weeks after a previous influenza vaccination, bone marrow transplant within the past 6 months). *Denominator* All long-stay residents with a selected influenza vaccination assessment, except those with exclusions. *Exclusions* Resident's age on target date of selected influenza vaccination assessment is 179 days or less. *Notes* This measure is only calculated once per 12-month influenza season which begins on July 1 of a given year and ends on June 30 of the subsequent year and reports data for residents who were in the facility for at least one day during the target period of October 1 through March 31.	Not applicable.

MDS 3.0 Measure: Percent of Residents with a Urinary Tract Infection (Long Stay)[1]

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N024.01 **NQF: 0684** **The measure reports the percentage of long stay residents who have a urinary tract infection**	*Numerator* Long-stay residents with a selected target assessment that indicates urinary tract infection within the last 30 days (I2300 = [1]). *Denominator* All long-stay residents with a selected target assessment, except those with exclusions. *Exclusions* 1. Target assessment is an admission assessment (A0310A = [01]) *or* a PPS 5-day *or* readmission/return assessment (A0310B = [01, 06]). 2. Urinary tract infection value is missing (I2300 = [-]).	Not applicable.

NOTE:

[1] This measure is used in the Five-Star Quality Rating System.

MDS 3.0 Measure: Percent of Residents Who Have/Had a Catheter Inserted and Left in Their Bladder (Long Stay)[1]

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N026.02 **NQF: 0686** **This measure reports the percentage of residents who have had an indwelling catheter in the last 7 days.**	**Numerator** Long-stay residents with a selected target assessment that indicates the use of indwelling catheters (H0100A = [1]). **Denominator** All long-stay residents with a selected target assessment, except those with exclusions. **Exclusions** 1. Target assessment is an admission assessment (A0310A = [01]) *or* a PPS 5-day *or* readmission/return assessment (A0310B = [01, 06]). 2. Target assessment indicates that indwelling catheter status is missing (H0100A = [-]). 3. Target assessment indicates neurogenic bladder (I1550 = [1]) *or* neurogenic bladder status is missing (I1550 = [-]). 4. Target assessment indicates obstructive uropathy (I1650 = [1]) *or* obstructive uropathy status is missing (I1650 = [-]).	1. Frequent bowel incontinence on prior assessment (H0400 = [2, 3]). 1.1 Covariate = [1] if (H0400 = [2, 3]). 1.2 Covariate = [0] if (H0400 = [0, 1, 9, -]). 2. Pressure ulcers at stages II, III, or IV on prior assessment: 2.1 Covariate = [1] if *any* of the following are true: 2.1.1 (M0300B1 = [1, 2, 3, 4, 5, 6, 7, 8, 9]), *or* 2.1.2 (M0300C1 = [1, 2, 3, 4, 5, 6, 7, 8, 9]), *or* 2.1.3 (M0300D1 = [1, 2, 3, 4, 5, 6, 7, 8, 9]). 2.2 Covariate = [0] if the following is true: 2.2.1 (M0300B1 = [0, -, ^]) *and* 2.2.2 (M0300C1 = [0, -, ^]) *and* 2.2.3 (M0300D1 = [0, -, ^]). 3. All covariates are missing if no prior assessment is available.

NOTE:

[1] This measure is used in the Five-Star Quality Rating System.

MDS 3.0 Measure: Percent of Residents Who Were Physically Restrained (Long Stay)[1]

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N027.01 NQF: 0687 **This measure reports the percent of long-stay nursing facility residents who are physically restrained on a daily basis.**	*Numerator* Long-stay residents with a selected target assessment that indicates daily physical restraints, where: 1. Trunk restraint used in bed (P0100B = [2]), *or* 2. Limb restraint used in bed (P0100C = [2]), *or* 3. Trunk restraint used in chair or out of bed (P0100E = [2]), *or* 4. Limb restraint used in chair or out of bed (P0100F = [2]), *or* 5. Chair prevents rising used in chair or out of bed (P0100G) = [2]). *Denominator* All long-stay residents with a target assessment, except those with exclusions. *Exclusions* Resident is not in numerator and any of the following is true: 1. (P0100B = [-]), *or* 2. (P0100C = [-]), *or* 3. (P0100E = [-]), *or* 4. (P0100F = [-]), *or* 5. (P0100G = [-]).	Not applicable.

NOTE:

[1] This measure is used in the Five-Star Quality Rating System.

MDS 3.0 Measure: Percent of Residents Whose Need for Help with Activities of Daily Living Has Increased (Long Stay)[1]

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

CMS: N028.01
 NQF: 0688
 	
 This measure reports the percent of long-stay residents whose need for help with late-loss Activities of Daily Living (ADLs) has increased when compared to the prior assessment.
	Numerator
	
	 Long-stay residents with selected target and prior assessment assessments that indicate the need for help with late-loss Activities of Daily Living (ADLs) has increased when the selected assessments are compared. The four late-loss ADL items are self-performance bed mobility (G0110A1), self-performance transfer (G0110B1), self-performance eating (G0110H1), and self-performance toileting (G0110I1).
	
	 An increase is defined as an increase in two or more coding points in one late-loss ADL item *or* one point increase in coding points in two or more late-loss ADL items. Note that for each of these four ADL items, if the value is equal to [7, 8] on either the target or prior assessment, then recode the item to equal [4] to allow appropriate comparison.
	
	 Residents meet the definition of increased need of help with late-loss ADLs if ***either*** of the following are true
	
	 1. ***At least two*** of the following are true (note that in the notation below, [t] refers to the target assessment, and [t-1] refers to the prior assessment):
	
	    1.1 Bed mobility: ([Level at target assessment (G0110A1[t])] - [Level at prior assessment (G0110A1[t-1])]) >[0], *or*
	
	    1.2 Transfer: ([Level at target assessment (G0110B1[t])] - [Level at prior assessment (G0110B1[t-1])]) >[0], *or*
	
	    1.3 Eating: ([Level at target assessment (G0110H1[t])] - [Level at prior assessment (G0110H1[t-1])]) >[0], *or*
	
	    1.4 Toileting: ([Level at target assessment (G0110I1[t])] - [Level at prior assessment (G0110I1[t-1])]) >[0].
	
	 2. ***At least one*** of the following is true:
	
	    2.1 Bed mobility: ([Level at target assessment (G0110A1[t])] - [Level at prior assessment (G0110A1[t-1])]) >[1], *or*
	
	    2.2 Transfer: ([Level at target assessment (G0110B1[t])] - [Level at prior assessment (G0110B1[t-1])]) >[1], *or*
		Not applicable.

(continued)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
	2.3 Eating: ([Level at target assessment (G0110H1[t])] - [Level at prior assessment (G0110H1[t-1])]) >[1], **or**	
	2.4 Toileting: ([Level at target assessment (G0110I1[t])] - [Level at prior assessment (G0110I1[t-1])]) >[1].	
	Denominator	
	All long-stay residents with a selected target and prior assessment, except those with exclusions.	
	Exclusions	
	1. All four of the late-loss ADL items indicate total dependence on the prior assessment, as indicated by:	
	1.1 Bed Mobility (G0110A1) = [4, 7, 8] **and**	
	1.2 Transferring (G0110B1) = [4, 7, 8] **and**	
	1.3 Eating (G0110H1) = [4, 7, 8] **and**	
	1.4 Toileting (G0110I1) = [4, 7, 8].	
	2. Three of the late-loss ADLs indicate total dependence on the prior assessment, as in #1 AND the fourth late-loss ADL indicates extensive assistance (value 3) on the prior assessment.	
	3. If resident is comatose (B0100 = [1, -]) on the target assessment.	
	4. Prognosis of life expectancy is less than 6 month (J1400 = [1, -]) on the target assessment.	
	5. Hospice care (O0100K2 = [1, -]) on the target assessment.	
	6. The resident is not in the numerator **and**	
	6.1 Bed Mobility (G0110A1 = [-]) on the prior or target assessment, **or**	
	6.2 Transferring (G0110B1 = [-]) on the prior or target assessment, **or**	
	6.3 Eating (G0110H1)= [-]) on the prior or target assessment, **or**	
	6.4 Toileting (G0110I1 = [-]) on the prior or target assessment.	

NOTE:

[1] This measure is used in the Five-Star Quality Rating System.

MDS 3.0 Measure: Percent of Residents Who Lose Too Much Weight (Long Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N029.01 NQF: 0689 **The measure captures the percentage of long-stay residents who had a weight loss of 5% or more in the last month or 10% or more in the last two quarters who were not on a physician prescribed weight-loss regimen noted in an MDS assessment during the selected quarter.**	*Numerator* Long-stay nursing home residents with a selected target assessment which indicates a weight loss of 5% or more in the last month or 10% or more in the last 6 months who were not on a physician prescribed weight-loss regimen (K0300 = [2]). *Denominator* Long-stay nursing home residents with a selected target assessment except those with exclusions. *Exclusions* 1. Target assessment is an OBRA admission assessment (A0310A= [01]) OR a PPS 5-day assessment (A0310B= [01]), OR a readmission/return assessment (A0310B= [06]). 2. Weight loss item is missing on the target assessment (K0300= [-]).	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Received an Antipsychotic Medication (Long-Stay)[12]

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

CMS: N031.02
NQF: none
 	
This measure reports the percentage of long-stay residents who are receiving antipsychotic drugs in the target period.
	Numerator
	
	Long-stay residents with a selected target assessment where the following condition is true: antipsychotic medications received. This condition is defined as follows:
	
	1. For assessments with target dates on or before 03/31/2012: (N0400A = [1]).
	
	2. For assessments with target dates on or after 04/01/2012: (N0410A = [1, 2, 3, 4, 5, 6, 7]).
	
	Denominator
	
	Long-stay residents with a selected target assessment, except those with exclusions.
	
	Exclusions
	
	1. The resident did not qualify for the numerator and *any* of the following is true:
	
	  1.1. For assessments with target dates on or before 03/31/2012: (N0400A = [-]).
	
	  1.2. For assessments with target dates on or after 04/01/2012: (N0410A = [-]).
	
	2. *Any* of the following related conditions are present on the target assessment (unless otherwise indicated):
	
	  2.1. Schizophrenia (I6000 = [1]).
	
	  2.2. Tourette's syndrome (I5350 = [1]).
	
	  2.3. Tourette's syndrome (I5350 = [1]) on the prior assessment if this item is not active on the target assessment and if a prior assessment is available.
	
	  2.4. Huntington's disease (I5250 = [1]).
		Not applicable.

NOTE:

[1] This measure has not been submitted to NQF for endorsement.

[2] This measure is used in the Five-Star Quality Rating System.

MDS 3.0 Measure: Percent of Residents Who Used Antianxiety or Hypnotic Medication (Long Stay)[1],

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

CMS: N036.01 NQF: none
 	
This measure reports the prevalence of antianxiety or hypnotic medication use (long stay) during the target period.
	Numerator
	
	Long-stay residents with a selected target assessment where any of the following conditions are true:
	
	1. For assessments with target dates on or before 03/31/2012:
	    1.1 Antianxiety medications received (N0400B = [1]), **or**
	    1.2 Hypnotic medications received (N0400D = [1]).
	2. For assessments with target dates on or after 04/01/2012:
	    2.1 Antianxiety medications received (N0410B = [1, 2, 3, 4, 5, 6, 7]), **or**
	    2.2 Hypnotic medications received (N0410D = [1, 2, 3, 4, 5, 6, 7]).
	
	Denominator
	
	Long-stay residents with a selected target assessment, except those with exclusions.
	
	Exclusions
	
	1. The resident did not qualify for the numerator and **any** of the following is true:
	    1.1. For assessments with target dates on or before 03/31/2012: (N0400B = [-] **or** N0400D = [-]).
	    1.2. For assessments with target dates on or after 04/01/2012: (N0410B = [-] **or** N0410D = [-]).
	2. Any of the following related conditions are present on the target assessment (unless otherwise indicated):
	    2.1. Life expectancy of less than 6 months (J1400 = [1]).
	    2.2. Hospice care while a resident (O0100K2 = [1]).
		Not applicable.

NOTE:

[1] This measure has not been submitted to NQF for endorsement.

MDS 3.0 Measure: Percent of Residents Whose Ability to Move Independently Worsened (Long Stay)[1,2]

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

CMS: N035.02 NQF: none
 	
This measure reports the percent of long-stay residents who experienced a decline in independence of locomotion during the target period.
	Numerator
	
	Long-stay residents with a selected target assessment and at least one qualifying prior assessment who have a decline in locomotion when comparing their target assessment with the prior assessment. Decline identified by:
	1. Recoding all values (G0110E1 = [7, 8]) to (G0110E1 = [4]).
	2. An increase of one or more points on the "locomotion on unit: self-performance" item between the target assessment and prior assessment (G0110E1 on target assessment – G0110E1 on prior assessment ≥1).
	
	Denominator
	
	Long-stay residents who have a qualifying MDS 3.0 target assessment and at least one qualifying prior assessment, except those with exclusions.
	
	Exclusions
	
	Residents satisfying any of the following conditions:
	1. Comatose or missing data on comatose (B0100 = [1, -]) at the prior assessment.
	2. Prognosis of less than 6 months at the prior assessment as indicated by:
	  2.1. Prognosis of less than six months of life (J1400 = [1]), *or*
	  2.2. Hospice use (O0100K2 = [1]), *or*
	  2.3. Neither indicator for being end-of-life at the prior assessment (J1400 ≠ [1] *and* O0100K2 ≠ [1]) *and* a missing value on either indicator (J1400 = [-] *or* O0100K2 = [-]).
	3. Resident totally dependent during locomotion on prior assessment (G0110E1 = [4, 7, *or* 8]).
	4. Missing data on locomotion on target *or* prior assessment (G0110E1 = [-]).
		Covariates used to risk-adjust this measure include:
		1. Eating (self-performance) from prior assessment
		  1.1 Needs Help Covariate = 1 if (G0110H1 = [2, 3]) *and* Covariate = 0 if (G0110H1 = [-, 0, 1, 4, 7, 8]).
		  1.2 Dependence Covariate = 1 if (G0110H1 = [4,7,8)] *and* Covariate = 0 if (G0110H1 = [-, 0,1,2,3]).
		2. Toileting (self-performance) from prior assessment
		  2.1 Needs Help Covariate = 1 if (G0110I1 = [2, 3]) *and* Covariate = 0 if (G0110I1 = [-, 0, 1, 4, 7, 8]).
		  2.2 Dependence Covariate = 1 if (G0110I1 = [4,7,8]) *and* Covariate = 0 if (G0110I1 = [-, 0,1,2,3]).

(continued)

MDS 3.0 Measure: Percent of Residents Whose Ability to Move Independently Worsened (Long Stay)[1,2] (continued)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

CMS: N035.02
NQF: none
 	
This measure reports the percent of long-stay residents who experienced a decline in independence in locomotion during the target period.
	5. Prior assessment is a discharge with or without return anticipated (A0310F = [10, 11]).
	6. No prior assessment is available to assess prior function.
	    6.1. Target assessment is an admission assessment (A0310A = [01]), a PPS 5-day (A0310B = [01]), *or* the first assessment after an admission (A0310E = [1]), *or* A0310B = [06].
		3. Transfer (self-performance) from prior assessment
		    3.1 Needs Help Covariate = 1 if (G0110B1 = [2,3]) *and* Covariate = 0 if (G0110B1 = [-, 0, 1, 4, 7, 8]).
		    3.2 Dependence Covariate = 1 if (G0110B1 = [4,7,8]) *and* Covariate = 0 if (G0110B1 = [-, 0,1,2,3]).
		4. Walking in Corridor (self-performance) from prior assessment
		    4.1 Independence Covariate = 1 if (G0110D1 = [0,1]) *and* Covariate = 0 if (G0110D1 = [-, 2, 3, 4, 7, 8]).
		    4.2 Needs Some Help Covariate = 1 if (G0110D1 = [2]) *and* Covariate = 0 if (G0110D1 = [-, 0, 1, 3, 4, 7, 8]).

(continued)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N035.02 **NQF: none** **This measure reports the percent of long-stay residents who experienced a decline in independence in locomotion during the target period.**		4.3 Needs More Help Covariate = 1 if (G0110D1 = [3]) **and** Covariate = 0 if (G0110D1 = [-, 0, 1, 2, 4, 7, 8]). 5. Severe cognitive impairment from prior assessment 5.1 Covariate = 1 if (C1000 = [3] **and** C0700 = [1]) **or** BIMS summary score (C0500 ≤ [7]). 5.2 Covariate = 0 if either of the following criteria are met: 5.2.1 (C1000 = [0, 1, 2] **or** C0700 = [0]) **and** (C0500 = [>7, ^, -, 99]). 5.2.2 (C0500 > [7]) **and** (C1000 = [0, 1, 2, ^, -] **or** C0700 = [0, ^, -]). 5.3 If Covariate has not been set to 1 or 0 based on logic in 5.1 and 5.2, then Covariate = [0].

(continued)

MDS 3.0 Measure: Percent of Residents Whose Ability to Move Independently Worsened (Long Stay)[1,2] (continued)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
		6. Linear Age *If* (MONTH(A2300) > MONTH(A0900)) *or* (MONTH(A2300) = MONTH(A0900) *and* DAY(A2300) >= DAY(A0900)) *then* Linear Age = YEAR(A2300)-YEAR(A0900) *else* Linear Age = YEAR(A2300)-YEAR(A0900)-1 7. Gender 7.1 Covariate = 1 if (A0800=[2]) (Female). 7.2 Covariate = 0 if (A0800=[1]) (Male). 8. Vision 8.1 Covariate = 1 if B1000 change score >0 with change score calculated from B1000 on the prior assessment to B1000 on the latest assessment with non-missing after the prior assessment.

(continued)

MDS 3.0 Measure: Percent of Residents Whose Ability to Move Independently Worsened (Long Stay)[1,2] (continued)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
		8.2 Covariate = 0 if either of the following criteria are met:
		8.2.1 B1000 change score ≤ 0 with change score calculated from B1000 on the prior assessment to B1000 on the latest assessment with non-missing B1000 after prior assessment.
		8.2.2 B1000 is not missing on the prior assessment, B1000 is missing on the target assessment, and no intermediate assessment has a non-missing value for B1000.
		8.3 If Covariate has not been set to 1 or 0 based on logic in 8.1 and 8.2, then Covariate = [0].
		9. Oxygen use
		9.1 Covariate = 1 where (O0100C2=[0]) on prior and (O0100C2 = [1]) on the latest assessment with non-missing O0100C2 after prior assessment.

(continued)

MDS 3.0 Measure: Percent of Residents Whose Ability to Move Independently Worsened (Long Stay)[1,2] (continued)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
		9.2 Covariate = 0 if (O0100C2 = [0 or 1]) on the prior assessment and either of the following criteria are met: 9.2.1 (O0100C2 = [0]) on the latest assessment with non-missing O0100C2 after prior assessment. 9.2.2 O0100C2 is not missing on the prior assessment, O0100C2 is missing on the target assessment, and no intermediate assessment has a non-missing value for O0100C2. 9.3 If Covariate has not been set to 1 or 0 based on logic in 9.1 and 9.2, then Covariate = [0]. 10. All covariates are missing if no prior assessment is available.

NOTES:

[1] This measure has not been submitted to NQF for endorsement.

[2] This measure is used in the Five-Star Quality Rating System.

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RTI INTERNATIONAL

MDS 3.0 Quality Measures

USER'S MANUAL

APPENDIX A

Technical Details

(v11.0 03-20-2017)
Effective April 1, 2017

Quality Measures (QM) Technical Details

List of Contents:

Section 1
Introduction

This appendix presents technical details regarding the calculation of the nursing home quality measures (QMs), including the methodology used for risk adjustment.

Overview of QM Calculations

The QMs are created from counts of nursing facility long stay residents or short stay residents who have certain conditions or problems (e.g., falls resulting in major injury). For example, facility-level scores for the long stay falls QM are computed by: 1) counting residents in the facility who had a fall resulting in major injury and 2) computing the percent of residents in the facility who had valid MDS data and who experienced such a fall. The detailed logic for defining the resident-level outcomes for each QM is presented in the QM Sample and Record Selection Methodology section and in the Quality Measure Logic Specifications section of this manual. This logic is listed under the "Numerator" entry for each QM.

A Note on Risk Adjustment

Risk adjustment refines raw QM scores to better reflect the prevalence of problems that facilities should be able to address. Two complementary approaches to risk adjustment are applied to the QMs.

One approach involves exclusion of residents whose outcomes are not under nursing facility control (e.g., outcome is evidenced on admission to the facility) or the outcome may be unavoidable (e.g., the resident has end-stage disease or is comatose). All of the QMs, except the vaccination QMs, are shaped by one or more exclusions. For each QM, the prevalence of the outcome across all residents in a nursing facility, after exclusions, is the *facility-level observed QM score*.

A second approach involves adjusting QM scores directly, using logistic regression. This method of adjustment employs *resident-level covariates* that are found to increase the risks of an outcome. Detailed specifications for resident-level covariates are presented in the Quality Measure Logical Specifications section of this manual. This approach involves the following steps:

- First, resident-level covariates were used in a logistic regression model to calculate a *resident-level expected QM score* (the probability that the resident will evidence the outcome, given the presence or absence of characteristics measured by the covariates). Section 3 of this Appendix presents the details for calculating expected scores for residents.

- Then, an average of all resident-level expected QM scores for the nursing facility was calculated to create a *facility-level expected QM score.*

- The final *facility-level adjusted QM score* was based on a calculation which combines the *facility-level expected score* and the *facility-level observed score*. The details for

calculating facility-level adjusted scores are presented in Section 4 of this Appendix. The parameters used for each release of the QMs are presented in Appendix B.

Only five of the QMs are adjusted using resident level covariates for public reporting:

- N002.02: Percent of Residents With Pressure Ulcers That Are New or Worsened (Short Stay)

- N037.02: Percent of Residents Who Improved Performance on Transfer, Locomotion, and Walking in the Corridor (Short Stay)

- N014.02: Percent of Residents Who Self-Report Moderate to Severe Pain (Long Stay)

- N026.02: Percent of Residents Who Have/Had a Catheter Inserted and Left in Their Bladder (Long Stay)

- N035.02: Percent of Residents Who Declined in Independence in Locomotion (Long Stay)

The remaining QMs are not adjusted using resident-level covariates. For these measures, facility-level observed QM scores are reported.

Section 2
Steps Used In National QM Calculation

Introduction

This section outlines the processing steps used to calculate QMs. The description below uses the Q2 2016 as the target period. The dates associated with these steps would be updated, as appropriate, for subsequent quarterly releases of the QMs. It is important to note two items that recurred throughout the process:

Every step in file construction and QM calculation proceeded in parallel for two samples of residents and facilities: a "Long stay" (LS) sample and a "Short stay" (SS) sample.

- Two "target periods" were defined:

    – a "Current Period" which was one quarter, Q2 2016, for LS residents and two quarters, Q1 2016 and Q2 2016, for SS patients. Data from the current periods were used as the target period for final QM reporting;

    – a "Current Year", Q3 2015 through Q2 2016, data which were used to estimate logistic regressions for risk adjustment.

Processing Steps:

1. *MDS Selection.* All MDS records for U.S. nursing facilities in Q3 2015 through Q2 2016 were selected.

2. *Episode Creation.* Using the definitions contained elsewhere in this document, episodes were created from the available data. Each episode was classified as either long or short stay depending upon the number of cumulative days in the facility. Only the latest episode was retained for each resident.

3. *Sampling for LS QMs.* Nursing facilities and residents were sampled to provide data for LS QM and covariate calculations.

    a. "Current Period" LS resident sample: residents were included in this sample if they had a long stay episode that ended within the last quarter of the target period (i.e., Q2 2016).

    b. "Current Year" LS resident sample: residents were included in this sample if they had a long stay episode in the target period Q3 2015 through Q2 2016).

    c. "Influenza Season" LS resident sample: includes residents with an influenza vaccination target assessment for the recent influenza season which ended on June 30. Only sampled once a year for the annual calculation of the influenza vaccination QMs at the end of June.

4. ***Sampling for SS QMs.*** Nursing facilities and residents were sampled to provide data for SS QM and covariate calculations.

   a. "Current Period" SS resident sample: residents were included in this sample if they had a short stay episode that ended within the last two quarters of the target period (i.e., Q1 2016 and Q2 2016).

   b. "Current Year" SS resident sample: residents were included in this sample if they had a short stay episode in the target period Q2 2015 through Q1 2016). "Influenza Season" SS resident sample: includes residents with an influenza vaccination target assessment for the recent influenza season which ended on March 31. Only sampled once a year for the annual calculation of the influenza vaccination QMs at the end of June.

   c. "Influenza Season" SS resident sample: includes residents with an influenza vaccination target assessment for the recent influenza season which ended on June 30. Only sampled once a year for the annual calculation of the influenza vaccination QMs at the end of June.

5. ***Resident-level QM Calculation Files.*** At this point, resident-level QM calculation files were created, separately for each LS resident sample and each SS resident sample, using the specified target, prior, initial, and influenza vaccination assessments for each resident record as appropriate.

6. ***Resident-level QM and Covariate Calculation Files.*** Next, resident-level QM scores were calculated (and covariate values were calculated for the risk-adjusted QMs), separately for each LS resident and SS resident.

   a. Resident-level QM calculation (all QMs):

      i. Resident exclusions: For each QM, excluded residents were assigned a missing value for that QM. Residents with missing covariate values were also assigned a missing value for that QM.

      ii. QM values: does the resident "trigger" the QM?

         1. If "Yes", then store a value of 1 for that QM in the resident-level QM calculation record appropriate to that resident for a sample.

         2. If "No", then store a value of 0 for that QM in the resident-level QM calculation record appropriate to that resident for a sample.

   b. Resident-level covariate calculation (risk-adjusted QMs):

      i. Resident exclusions: For each QM, excluded residents were assigned a missing value for that QM. Residents with missing covariate values were also assigned a missing value for that QM.

      ii. Covariate: does the resident "trigger" the covariate?

         1. If "Yes", then store a value of 1 for that covariate in the resident-level QM calculation record appropriate to that resident for a sample.

2. If "No", then store a value of 0 for that covariate in the resident-level QM calculation record appropriate to that resident for a sample.

7. ***Logistic Regressions.*** With the resident-level files complete, and all relevant exclusions applied, logistic regressions for the risk-adjusted QMs were estimated using the Current Year LS and SS samples (Q3 2015 through Q2 2016).

   a. Input: LS or SS resident-level file.

   b. Dependent variable: was the QM triggered? (yes = 1, no = 0).

   c. Predictors: resident-level covariates.

   d. Calculation of logistic regressions: (See Section 3 in this Appendix).

   e. Output values: logistic regression constant term and resident-level covariate coefficients for each of the risk-adjusted QMs. The resulting values are given in Table B.1 of Appendix B.

   The logistic regression results calculated for Q1 2016 will remain in effect for QM calculation in subsequent quarters. Recalculation may occur sometime in the future if deemed appropriate.

8. ***Resident-level Expected QM Scores.*** For the QMs that were risk adjusted, resident-level expected QM scores were calculated for each resident for the Current Period LS and SS samples. (See Section 3 in this Appendix for calculation formulas).

   a. Input: logistic regression constant term and resident-level covariate coefficients from the previous step for each adjusted QM.

   b. Output values: resident-level expected QM scores for each resident, for each of the risk-adjusted QMs.

9. ***National Mean QMs.*** National mean observed QMs were needed for calculating the facility-level adjusted QM scores below. The overall national mean observed QM scores for the Current Period LS and SS samples were calculated, for each risk adjusted QM:

   a. Numerator: for each QM, count the total number or residents that triggered the QM and sum for the nation.

   b. Denominator: for each QM, count the total number of residents retained after exclusions and sum for the nation. Note that the sample will include only those residents with non-missing data for the component covariates.

   c. Overall national mean observed QM score: divide the numerator by the denominator.

10. ***Facility-level Observed QM Scores.*** For all QMs, the facility-level observed QM scores were calculated for the Current Period LS and SS samples -- for the QMs that were not risk adjusted, these are the measures that will be publicly reported.

    a. Numerator: for each QM, count the total number of residents who triggered the QM in each facility and sum for the nursing facility.

---

b. Denominator: for each QM, count the total number of residents retained after exclusions for each facility and sum for the nursing facility. Note that the sample will include only those residents with non-missing data for the component covariates.

c. Facility-level observed QM scores: divide the numerator by the denominator for each QM and nursing facility.

11. ***Facility-level Expected QM Scores.*** For the risk-adjusted QMs, the facility-level expected QM scores are calculated for the Current Period LS and SS samples. This is done by averaging the resident-level expected QM scores for each QM within each nursing facility. Note that the sample will include only those residents with non-missing data for the component covariates.

12. ***Facility-level Adjusted QM Scores.*** Finally, for the risk-adjusted QMs, the facility-level adjusted QM scores were calculated for the Current Period LS and SS samples.

    a. Input -- for each of the risk-adjusted QMs

       i. Facility-level observed QM scores

      ii. Facility-level expected QM scores

     iii. National mean observed QM scores

    b. Calculation: (See Section 4 of this Appendix for calculation formulas)

    c. Output: Facility-level adjusted QM scores for the five risk-adjusted QMs

13. ***Final Facility-level Output File.*** The final facility-level output files for the Current Period LS and SS QMs contained the following:

    a. For all QMs:

       i. Facility numerator counts

      ii. Facility denominator counts

     iii. Facility-level observed QM scores (publicly reported for the unadjusted QMs)

    b. For the risk-adjusted QMs: Facility-level adjusted QM scores (publicly reported scores)

Section 3
Calculation of the Expected QM Score

For the QMs adjusted with resident-level covariates, the resident-level expected QM score was calculated as an intermediate step to obtaining an adjusted QM score for the facility. This section describes the technical details referred to in Section 2 of this Technical Appendix.

Calculating Resident-level Expected QM Scores

The resident-level expected score for a QM is an estimate of the risk that a resident will trigger the QM. This estimate is based on consideration of the resident-level covariates associated with the QM.

For each of the risk-adjusted QMs, a resident-level logistic regression was estimated. Data came from the short stay and long stay samples described in the prior section of this appendix. The resident-level observed QM score was the dependent variable. The predictor variables were one or more resident-level covariates associated with the QM. Calculation of the QM and covariate scores is described in Section 2 (Step 5) of this Appendix.

Each logistic regression had the following form:

[1] QM triggered (yes = 1, no = 0) = $B_0 + B_1 * COV_A + B_2 * COV_B + \ldots + B_N * COV_N$

where B_0 is the logistic regression constant, B_1 is the logistic regression coefficient for the first covariate, COV_A is the resident-level score for the first covariate, B_2 is the logistic regression coefficient for the second covariate (where applicable), and COV_B is the resident-level score for the second covariate (where applicable), and so on.

Each resident's expected QM score could then be calculated with the following formula:

[2] Resident-level expected QM score = $1/[1+e^{-X}]$

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 [1], above). A covariate score will be 1 if the covariate is triggered for that resident, and 0 if not.

As an example, consider the actual calculation used for the expected score for the LS "Percent of residents who have moderate to severe pain" QM (N014.02). The covariate for that QM is an indicator of independence in daily decision-making on the prior assessment. The equation used for this QM (with the parameters from Table B.1 for Q1 2016) is:

[3] $N014.01.02 \text{ Score} = 1/[1+e^{-(B_0 + B_1 * IndpDec)}]$

where B_0 is the logistic regression constant, B_1 is the logistic regression coefficient for IndpDec, and IndpDec is the resident-level covariate indicating independence in daily decision-making.

The N014.02 score for a resident who triggers the independence in decision making covariate (covariate score = 1) is expected to be:

$$[4] \quad 0.1572 = 1/[1+e^{-(-2.8199238 + 1.140155 * 1)}]$$

For a resident who does not trigger the independence in decision making covariate (covariate score = 0), the N014.02 score is expected to be:

$$[5] \quad 0.0563 = 1/[1+e^{-(-2.8199238 + 1.140155 * 0)}]$$

Thus a resident who is independent in decision making (i.e. covariate = 1) is over twice as likely to report severe pain (15.72 percent, compared to 5.63 percent for a resident who is not independent in decision making).

The parameters used for calculating the resident-level expected QM scores are presented in Table B.1 of Appendix B.

Calculating Facility-level Expected QM Scores

Once an expected QM score has been calculated for all residents at risk, the facility-level expected QM score is simply the average of all resident-level scores for each of the risk-adjusted QMs.

Section 4
Calculation of the Adjusted QM Score

The risk-adjusted QM score is a facility-level QM score adjusted for the specific risk for that QM in the nursing facility. The risk-adjusted QM score can be thought of as an estimate of what the nursing facility's QM rate would be if the facility had residents with average risk.

The facility-level adjusted score is calculated on the basis of

- The facility-level observed QM score,
- The facility-level average expected QM score, and
- The national average observed QM score.

The actual calculation of the adjusted score uses the following equation:

$$[6]\ \text{Adj} = 1/\left[1 + e^{-y}\right]$$

where

Adj is the facility-level adjusted QM score, and

$$y = \left(\text{Ln}\left(\frac{\text{Obs}}{1 - \text{Obs}}\right) - \text{Ln}\left(\frac{\text{Exp}}{1 - \text{Exp}}\right) + \text{Ln}\left(\frac{\text{Nat}}{1 - \text{Nat}}\right)\right)$$

Obs is the facility-level observed QM rate,

Exp is the facility-level expected QM rate,
Nat is the national observed QM rate, and
Ln indicates a natural logarithm.
e is the base of natural logarithms

Note that the adjusted QM rate (Adj) is calculated differently in two special cases:

1. When Obs equals 0.00, then Adj is set to 0.00 (without using the equation).

2. When Obs equals 1.00, then Adj is set to 1.00 (without using the equation).

The adjusted QM score equation will produce adjusted scores in the range of 0 to 1. These adjusted scores can then be converted to percentages for ease of interpretation.

These adjusted score calculations are applied to QMs that use expected scores based on resident-level covariates (See Section 3 of this Appendix). The national average observed QM rates, required for these calculations, are presented in Appendix B.

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MDS 3.0 Quality Measures

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APPENDIX B

Parameters Used for Each Quarter

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Introduction

This appendix presents the model parameters that were estimated for the risk adjusted QMs for the following time period:

- The period ending June 30, 2016, referred to as Q2 2016.

The purpose of this document is to present the logistic regression coefficients used in the risk adjustment calculations that were applied to the risk-adjusted QMs. For details regarding the use of these parameters, please refer to Appendix A.

Logistic Regression Coefficients

Five QMs are risk adjusted. The logistic regression coefficients used are presented in Table B.1. Where risk adjustment involves the use of more than one resident-level covariate, coefficients are listed in the order presented in the LS and SS matrices that are presented in the MDS 3.0 Quality Measures Logical Specifications section of this manual. The calculations in Table B.1 are based on calculations for the Current Year sample ending with Q2 2016.

Table B.1. Logistic Regression Coefficients

QM	Constant (Intercept)	Resident-Level Covariates	
N002.02	-5.959653	1. Covariate 1 (Impaired Mobility)	1.093433
		2. Covariate 2 (Bowel Incontinence)	0.833794
		3. Covariate 3 (Diabetes or PVD)	0.292546
		4. Covariate 4 (Low BMI)	0.441548
N037.02	0.694135	1. Covariate 1.1 (Age Category<54)	-0.030028
		2. Covariate 1.2 (Age Category 54 to 84) (reference category)	0.0
		3. Covariate 1.3 (Age Category>84)	-0.154330
		4. Covariate 2.1 (Female)	0.034453
		5. Covariate 3.1 (Cognitive Impairment)	-0.568154
		6. Covariate 4.1 (ADL Lowest Tercile)	-0.155212
		7. Covariate 4.2 (ADL Middle Tercile) (reference category)	0.0
		8. Covariate 4.3 (ADL Highest Tercile)	-0.304632
		9. Covariate 5.1 (Heart Failure)	-0.069516
		10. Covariate 6.1 (CVA/TIA/Stroke)	-0.128508
		11. Covariate 7.1 (Hip Fracture)	0.308988
		12. Covariate 8.1 (Other Fracture)	0.258188
N014.02	-3.064304	1. Covariate 1 (Independence in Daily Decision-making)	1.173784
N026.02	-4.054929	1. Covariate 1.1 (Bowel Incontinence)	0.503225
		2. Covariate 2.1 (Pressure Ulcer)	2.200337

(continued)

Table B.1. Logistic Regression Coefficients (continued)

QM	Constant (Intercept)	Resident-Level Covariates	
N035.02	-2.514385	1. Covariate 1.1 (Help with Eating)	0.027384
		2. Covariate 1.2 (Dependence Eating)	0.479012
		3. Covariate 2.1 (Help with Toileting)	0.268124
		4. Covariate 2.2 (Dependence Toileting)	0.459122
		5. Covariate 3.1 (Help with Transfer)	0.094572
		6. Covariate 3.2 (Dependence with Transfer)	0.431506
		7. Covariate 4.1 (Independence with Walking)	0.081769
		8. Covariate 4.2 (Some Help with Walking)	-0.094972
		9. Covariate 4.3 (More Help with Walking)	-0.596020
		10. Covariate 5 (Severe Cognitive Impairment)	0.126871
		11. Covariate 6 (Age)	0.007607
		12. Covariate 7 (Female)	0.026816
		13. Covariate 8 (Impaired Vision)	0.370356
		14. Covariate 9 (Oxygen Use)	0.904091

National Observed Means

The national observed QM means are updated for each quarterly release. Table B.2 presents these means for Q2 2016, as an example.

Table B.2. National Observed QM Means

QM	Q2 2016
N002.02	0.013232
N037.02	0.626922
N014.02	0.078114
N026.02	0.028926
N035.02	0.17926

MDS 3.0 Quality Measures

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APPENDIX C

Episode and Stay Determination Logic

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MDS 3.0 Episode and Stay Determination Logic

Introduction

Several CMS applications are based upon the identification of stays and episodes using MDS 3.0 data. This document provides definitions and detailed logic that can be used by these applications.

This document begins with definitions of key terms and concepts. It then explains how stays and episodes are identified in a well-defined assessment data stream (i.e., when all assessment completion and submission rules are followed). It concludes with detailed logic that handles exceptional cases (e.g., missing entry or discharge records).

Definitions

An episode consists of one or more stays, and a stay is defined as a set of contiguous days in a facility. Because an episode is built from a set of one or more stays, the episode can be identified if the stays have been built properly. Therefore, this section will describe how to build stays.

Three properties of each stay must be determined:

- The starting date.
- The ending date.
- The stay type (admission or reentry).

The starting date is the date the resident entered the facility (either for the first time or after a previous discharge). The ending date is either (a) the discharge date, or (b) the end of the target period, whichever is earlier. The stay type is defined as follows:

Admission. An admission occurs when ***any one*** of the following conditions apply:

- The resident has never been admitted to this facility before; ***or***
- The resident has been in this facility previously and was discharged return not anticipated; ***or***
- The resident has been in this facility previously and was discharged return anticipated and did not return within 30 days of discharge.

Reentry. A reentry occurs when ***both of the following*** conditions apply:

- The resident has a discharge return anticipated, ***and***
- The resident returned to the facility within 30 days of discharge.

Rules For A Well- Constructed Data Stream

In a well-constructed data stream (where all records are submitted and correctly coded), the following logic will correctly determine the starting date, ending date, and type for each stay. This logic assumes that the resident's records have been sorted in reverse chronological order (see the end of this section for sorting details). Stays and episodes must be contained within a single facility, so the following logic applies to the records for a single facility.

1. If the first (latest) record that is on or before the end of the reporting period is a discharge (A0310F = [10, 11, 12]), then the **stay end date** is equal to the discharge date (A2000). Otherwise, the stay is ongoing and the **stay end date** is equal to the end of the reporting period.

2. If the **stay end date** of the resident's latest stay chronologically precedes the beginning of the target period[1], then the episode is not included in the sample. If the stay is ongoing or if the discharge occurs within the target period, then continue.

3. Scan backwards chronologically until an entry record (A0310F = [01]) is encountered. The **stay start date** is equal to the entry date (A1600) on the entry record.

4. Look at the chronologically preceding record. The stay type is defined as follows:

    4.1. If a chronologically preceding record is found and if it is a discharge return anticipated (A0310F = [11]) **and** if the discharge date of the discharge record is within 30 days of the stay start date defined above, then the stay type is a reentry. Otherwise, the stay type is an admission. Admissions occur under **any** of the following conditions:

        4.1.1. No chronologically preceding record is found.

        4.1.2. A chronologically preceding record is found and it is a discharge return not anticipated (A0310F = 10).

        4.1.3. A chronologically preceding record is found and it is a discharge return anticipated (A0310F = 11) and the discharge date is 31 days or more before the stay start date.

5. If the stay was classified as an admission stay, then scanning would stop because this would mark the beginning of the episode. If the stay was a reentry, then the scan logic would continue with the stay that ended with the record found in Step #4 (if any). Stays would continue to be scanned and classified until one of the following conditions occurred:

    5.1. An admission stay was identified, **or**

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[1] The span of time that defines the application's reporting period (e.g., a calendar quarter).

5.2. No more records were found for the same resident and facility, *or*

5.3. An application-specific rule was met. For example, for short stay Quality Measures (QMs), processing stops when the number of cumulative days in the facility (CDIF) exceeded 100 days (CDIF is the sum of the number of days within each of the stays that are contained in the episode).

Handling Missing Records

Exceptions to the rules will occur when entry and/or discharge records are missing from a resident's data stream. When this occurs, starting and/or ending dates must be imputed and the stay type must be determined as accurately as possible. The following rules will describe how these situations are handling. This discussion will refer to three types of records:

- Entry record (where A0310F= [01]).
- Discharge record (where A0310F= [10, 11, 12]).
- A normal assessment (where A0310F= [99]).

Missing Entry Records

In the scan logic described above, if a normal assessment is immediately preceded chronologically by a discharge record or if there is no chronologically preceding record, then an entry record is missing. In this case the stay start date and type must be imputed. The imputation rules are as explained below. In these rules, the assessment that is preceded chronologically by a discharge or that has no preceding record is termed the "problem assessment".

The table below is used to impute the entry date when there is a missing entry record.

Table C1: Possible Entry Dates When Entry Record is Missing

Type of Problem Assessment	Reasons for Assessment	Possible Entry Dates	
		Earliest Date	Latest Date
5-day PPS	A0310B=[01]	A2300 - 7 days	A2300
14-day PPS	A0310B=[02]	A2300 - 18 days	A2300 - 10 days
30-day PPS	A0310B=[03]	A2300 - 33 days	A2300 - 20 days
60-day PPS	A0310B=[04]	A2300 - 63 days	A2300 - 49 days
90-day PPS	A0310B=[05]	A2300 - 93 days	A2300 - 79 days
PPS readmission/ return	A0310B=[06]	A2300 - 7 days	A2300
OBRA admission	A0310A=[01]	A2300 - 13 days	A2300
Other OBRA	A0310A=[02,03,04,05,06]	A2300 - 106 days	A2300
OMRA	A0310B=[07]	A2300 - 7 days	A2300
Discharge	A0310F=[10,11,12]	A1600	A1600

The table above lists various types of problem assessments and shows the earliest and latest possible entry dates that are associated with each one. The following steps explain how to use this table to impute an entry date and stay type when a problem assessment is chronologically preceded by a discharge assessment or where no record precedes the problem assessment.

1. Use the table above to classify the problem assessment. Classify the assessment using the reason for assessment items indicated in the table. If the problem assessment qualifies for more than one of the rows in the table, use the first (top-most) row for which it qualifies.

2. Determine the earliest and latest entry date associated with the selected row.

3. Determine the entry date (A1600) that is reported on the problem assessment.

4. Determine a tentative entry date, as follows:

    4.1. If the entry date (A1600) on the problem assessment falls between the earliest and latest entry date in the table, set the tentative entry date equal to this value of A1600.

    4.2. Otherwise, set the tentative entry date equal to the date that is listed in the "earliest date" column of the table.

5. Determine a final imputed entry date, as follows:

    5.1. If the problem assessment is chronologically preceded by a discharge record, add one day to the discharge date (A2000) on the discharge record and compare the resulting date with the tentative entry date (A1600 from the assessment). Set the final imputed entry date equal to the later of these two dates.

    5.2. If there is no record that chronologically precedes the problem assessment, then set the final imputed entry date equal to the tentative entry date.

6. Determine the stay type, as follows:

    6.1. If the problem assessment is chronologically preceded by a discharge record, determine the stay type using the normal logic described above.

    6.2. If there is no record that chronologically precedes the problem assessment, then set the stay type as an admission stay.

MISSING DISCHARGE RECORDS

In the scan logic described above, if an entry record is immediately preceded chronologically by a normal assessment, then a discharge record is missing. In this case, the end date of the chronologically preceding stay and the stay type of the current stay must be imputed. The imputation rules are as follows. In these rules, the assessment that chronologically precedes the entry record is termed the "ending index assessment". The "current stay" is the stay that begins with the entry record. The "chronologically preceding stay" is the stay that contains the ending index assessment.

1. The end date of the chronologically preceding stay is set equal to the assessment reference date that is recorded on the ending index assessment.
2. Set the stay type of the current stay as follows:
   2.1. Determine the value of A1700 that is recorded on the entry record of the current stay.
   2.2. If A1700 is equal to [1] (admission), then set the stay type for the current stay to "admission".
   2.3. If A1700 is equal to [2] (reentry), then set the stay type for the current stay to "reentry".

Multiple Entry Records

If there are two or more entry records which are adjacent to one another in the resident's data stream, keep the latest entry record and ignore the earlier adjacent entry record(s).

Multiple Discharge Records

If there are two or more discharge records which are adjacent to one another in the resident's data stream, keep the latest discharge record and ignore the earlier adjacent discharge record(s).

Sorting Rules

As noted above, stays are identified from the records for a given resident and facility that are sorted in reverse chronological order. Sorting criteria must be applied to handle the case where there is more than one record on a given target date. The exact sorting criteria are as follows:

a) State ID +
   b) Facility internal ID +
   c) Resident internal ID +
   d) Target date (descending) +
   e) Record type (descending) +
   f) Assessment internal ID (descending)

Note that record type (record_type) is defined as follows:

1. If A0310F = 01 (the record is an entry record), then record_type = [1].

2. Else if A0310F = 99 (the record is not an entry or discharge), then:

   a. If the item subset code[2] is equal to NC (comprehensive assessment), then record_type = [7].

   b. Else if the item subset code is equal to NQ (quarterly assessment), then record_type = [6].

   c. Else if the item subset code is equal to NP (PPS assessment), then record_type = [5].

   d. Else if the item subset code is equal to NO ("other" OMRA assessment), then record type = [4].

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[2]   The item subset code is contained in the field ITM_SBST_CD.

e. Else if the item subset code is equal to NS (start-of-therapy OMRA assessment), then record_type = [3].

f. Else record_type = [2] (this condition should not occur).

3. Else if A0310F = [10] (discharge, return not anticipated), then record_type = [8].

4. Else if A0310F = [11] (discharge, return anticipated), then record_type = [9].

5. Else if A0310F = [12] (death in facility), then record_type = [10].

Also note that the assessment internal ID is used as the final tie-breaker on the assumption that records that should be later in the sort sequence will be submitted and processed later than the other records. The record processing timestamp would be a slightly better field to use for this purpose. However, it is available only to users who have direct access to the ASAP database. The assessment internal ID was therefore adopted as a reasonable substitute for the timestamp so that all users would have access to the same sorting fields.

RTI INTERNATIONAL

MDS 3.0 Quality Measures

USER'S MANUAL

APPENDIX D

Measures Withdrawn from NQF Submission

(v11.0 03-20-2017)
Effective April 1, 2017

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Measures Withdrawn from NQF Submission

The following measures were previously approved or given time limited endorsement by the National Quality Forum (NQF) but have been withdrawn from NQF submission.

**MDS 3.0 Measure: Percent of Residents Assessed and Appropriately
Given the Pneumococcal Vaccine (Short Stay)**

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N007.01 **NQF: 0682** **This measure reports the percent of short-stay residents whose pneumococcal vaccine status is up to date during the 12-month reporting period.**	*Numerator* Residents meeting any of the following criteria on the selected target assessment: 1. Pneumococcal vaccine status is up to date (O0300A = [1]); *or* 2. Were offered and declined the vaccine (O0300B = [2]); *or* 3. Were ineligible due to medical contraindication(s) (O0300B = [1]) (e.g., anaphylactic hypersensitivity to components of the vaccine; bone marrow transplant within the past 12 months; *or* receiving a course of chemotherapy within the past two weeks). *Denominator* All short-stay residents with a selected target assessment. *Exclusions* Resident's age on target date of selected target assessment is less than 5 years (i.e., resident has not yet reached 5th birthday on target date).	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Received the Pneumococcal Vaccine (Short Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N008.01 NQF: 0682A **This measure reports the percent of short-stay residents who received the pneumococcal vaccine during the 12-month reporting period.**	*Numerator* Residents meeting the following criteria on the selected target assessment: 1. Pneumococcal vaccine status is up to date (O0300A = [1]). *Denominator* All short-stay residents with a selected target assessment. *Exclusions* Resident's age on target date of selected target assessment is less than 5 years (i.e., resident has not yet reached 5th birthday on target date).	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Were Offered and Declined the Pneumococcal Vaccine (Short Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N009.01 **NQF: 0682B** **This measure reports the percent of short-stay residents who were offered and declined the pneumococcal vaccine during the 12-month reporting period.**	*Numerator* Residents meeting the following criteria on the selected target assessment: 1. Were offered and declined the vaccine (O0300B = [2]). *Denominator* All short-stay residents with a selected target assessment. *Exclusions* Resident's age on target date of selected target assessment is less than 5 years (i.e., resident has not yet reached 5th birthday on target date).	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Did Not Receive, Due to Medical Contraindication, the Pneumococcal Vaccine (Short Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N010.01 NQF: 0682C **This measure reports the percent of short-stay residents who did not receive, due to medical contraindication, the pneumococcal vaccine during the 12-month reporting period.**	*Numerator* Residents meeting the following criteria on the selected target assessment: 1. Were ineligible due to medical contraindication(s) (O0300B = [1]) (e.g., anaphylactic hypersensitivity to components of the vaccine; bone marrow transplant within the past 12 months; *or* receiving a course of chemotherapy within the past two weeks). *Denominator* All short-stay residents with a selected target assessment. *Exclusions* Resident's age on target date of selected target assessment is less than 5 years (i.e., resident has not yet reached 5th birthday on target date).	Not applicable.

MDS 3.0 Measure: The Percentage of Residents on a Scheduled Pain Medication Regimen on Admission Who Self-Report a Decrease in Pain Intensity or Frequency (Short Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N012.01 NQF: 0675-withdrawn **This measure captures the percentage of short-stay residents who can self-report pain, are on a scheduled pain medication regimen at their initial assessment, and who report lowered levels of pain on their target assessment.**	***Numerator*** Short-stay residents with both an initial assessment and a subsequent target assessment, ***and*** who can self-report on pain (J0200 = [1]) on both the initial assessment and the target assessment. ***and*** who are on a scheduled pain medication regimen on their initial assessment (J0100A = [1]) , ***and*** who report reduced pain on their target assessment when compared with their initial assessment as indicated by ***any*** of the following: 1. Resolution of pain with J0300 = [1] (pain present) on the initial assessment ***and*** J0300 = [0] (no pain) on the target assessment. 2. Decrease in pain frequency indicated by J0400 = [1, 2, 3, 4] on both the initial and target assessments and J0400 on the target assessment > J0400 on the initial assessment. A score of [1] on J0400 indicates the most frequent pain and a score of [4] indicates the least frequent. 3. Reduced intensity of pain indicated by J0600A = [00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 10] on both the initial and target assessments and J0600A on the target assessment < J0600A on the initial assessment. A score of [10] on J0600A indicates the most intense pain and a score of [00] indicates no pain. 4. Reduced intensity of pain indicated by J0600B = [1, 2, 3, 4] on ***both*** the initial and target assessments and J0600B on the target assessment < J0600B on the initial assessment. A score of [4] on J0600B indicates the most intense pain and a score of [1] indicates the least intense pain. ***Denominator*** Short-stay residents with both an initial assessment and a subsequent target assessment, ***and*** Who can self-report on pain (J0200 = [1]) on both the initial assessment and the target assessment. ***and*** Who are on a scheduled pain medication regimen (J0100A = [1]) on the initial assessment, except those who meet the exclusion criteria.	Not applicable.

(continued)

MDS 3.0 Measure: The Percentage of Residents on a Scheduled Pain Medication Regimen on Admission Who Self-Report a Decrease in Pain Intensity or Frequency (Short Stay) (continued)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

	Exclusions
	
	Residents are excluded in *any* of the following cases:
	
	1. The resident is not included in the numerator AND the value for J0300 or J0400 is [9] or dash [-] indicating not assessed on either the initial or target assessment.
	
	2. The resident is not included in the numerator *and* a valid comparison could not be made between the initial and target assessment on either J0600A or J0600B. In order for a valid comparison to be made, *at least one* of the following must be true:
	
	   2.1 Item J0600A must have a value of [00] through [10] on both the initial and target assessments.
	
	   2.2. Item J0600B must have a value of [1] through [4] on both the initial and target assessments.
	
	3. There was no opportunity for the pain levels to improve because pain levels were at their lowest level possible on the initial assessment. This will occur if one of the following is true for the *initial assessment*:
	
	   3.1. J0300 = [0] (the resident reports no pain).
	
	   3.2. *Both* the following conditions are true:
	
	       3.2.1 J0400 = [4] (pain occurs rarely) *and*
	
	       3.2.2. J0600A = [00, -, ^] (no pain reported) *or* J0600B = [1, 9, ^] (no pain reported).	

MDS 3.0 Measure: Percent of Residents Assessed and Appropriately Given the Pneumococcal Vaccine (Long Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N020.01 NQF: 0683 **This measure reports the percent of long-stay residents whose pneumococcal vaccine status is up to date.**	***Numerator*** Residents meeting any of the following criteria on the selected target assessment: 1. Have an up to date pneumococcal vaccine status (O0300A = [1]); ***or*** 2. Were offered and declined the vaccine (O0300B = [2]); ***or*** 3. Were ineligible due to medical contraindication(s) (e.g., anaphylactic hypersensitivity to components of the vaccine; bone marrow transplant within the past 12 months; ***or*** receiving a course of chemotherapy within the past two weeks) (O0300B = [1]). ***Denominator*** All long-stay residents with a selected target assessment.	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Received the Pneumococcal Vaccine (Long Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N021.01 **NQF: 0683A** **This measure reports the percent of long-stay residents who received the pneumococcal vaccine during the 12-month reporting period.**	*Numerator* Residents meeting the following criteria on the selected target assessment: 1. Pneumococcal vaccine status is up to date (O0300A = [1]). *Denominator* All long-stay residents with a selected target assessment.	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Were Offered and Declined the Pneumococcal Vaccine (Long Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N022.01 NQF: 0683B **This measure reports the percent of long-stay residents who were offered and declined the pneumococcal vaccine during the 12-month reporting period.**	*Numerator* Residents meeting the following criteria on the selected target assessment: 1. Were offered and declined the vaccine (O0300B = [2]). *Denominator* All long-stay residents with a selected target assessment.	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Did Not Receive, Due to Medical Contraindication, the Pneumococcal Vaccine (Long Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N023.01 **NQF: 0683C** **This measure reports the percent of long-stay residents who did not receive, due to medical contraindication, the pneumococcal vaccine during the 12-month reporting period.**	*Numerator* Residents meeting the following criteria on the selected target assessment: 1. Were ineligible due to medical contraindication(s) (O0300B = [1]) (e.g., anaphylactic hypersensitivity to components of the vaccine; bone marrow transplant within the past 12 months; *or* receiving a course of chemotherapy within the past two weeks). *Denominator* All long-stay residents with a selected target assessment.	Not applicable.

MDS 3.0 Measure: Percent of Residents Who Have Depressive Symptoms (Long Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

CMS: N030.01
NQF: 0690
 	
The measure reports the percentage of long-stay residents who have had symptoms of depression during the 2-week period preceding the MDS 3.0 target assessment date.
	Numerator
	Long-stay residents with a selected target assessment where the target assessment meets *either* of the following two conditions:
	
	CONDITION A (The resident mood interview must meet Part 1 *and* Part 2 below)
	PART 1:
	• Little interest or pleasure in doing things half or more of the days over the last two weeks (D0200A2 =[2, 3]).
	   or
	• Feeling down, depressed, or hopeless half or more of the days over the last two weeks (D0200B2 =[2, 3]).
	PART 2:
	  The resident interview total severity score indicates the presence of depression (D0300 ≥ [10] and D0300 ≤ [27]).
	
	CONDITION B: (The staff assessment of resident mood must meet Part 1 *and* Part 2 below)
	PART 1:
	• Little interest or pleasure in doing things half or more of the days over the last two weeks (D0500A2 =[2, 3]).
	   or
	• Feeling or appearing down, depressed, or hopeless half or more of the days over the last two weeks (D0500B2 =[2, 3]).
	PART 2:
	  The staff assessment total severity score indicates the presence of depression (D0600 ≥ [10] and D0600 ≤ [30]).
		Not applicable.

(continued)

MDS 3.0 Measure: Percent of Residents Who Have Depressive Symptoms (Long Stay) (continued)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
	Denominator All long-stay residents with a selected target assessment, except those with exclusions. **Exclusions** 1. Resident is comatose or comatose status is missing (B0100 = [1, -]). 2. Resident is not included in the numerator (the resident did not meet the depression symptom conditions for the numerator) AND both of the following are true: a. D0200A2 = [^, -] *or* D0200B2 = [^, -] *or* D0300 = [99, ^, -]. b. D0500A2 = [^, -] *or* D0500B2 = [^, -] *or* D0600 = [^, -].	

MDS 3.0 Measure: Percent of Low Risk Residents
Who Lose Control of Their Bowel or Bladder (Long Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

CMS: N025.01
 NQF: 0685
 	
 The measure reports the percent of long-stay residents who frequently lose control of their bowel or bladder.
	Numerator
	 Long-stay residents with a selected target assessment that indicates frequently or always incontinence of the bladder (H0300 = [2, 3]) *or* bowel (H0400 = [2, 3]).
	
	 Denominator
	 All long-stay residents with a selected target assessment, except those with exclusions.
	
	 Exclusions
	 1. Target assessment is an admission assessment (A0310A = [01]) *or* a PPS 5-day or readmission/return assessment (A0310B = [01, 06]).
	 2. Resident is not in numerator and H0300 = [-] *or* H0400 = [-].
	 3. Residents who have **any** of the following high risk conditions:
	   a. Severe cognitive impairment on the target assessment as indicated by (C1000 = [3] and C0700 = [1]) *or* (C0500 ≤ [7]).
	   b. Totally dependent in bed mobility self-performance (G0110A1 = [4, 7, 8]).
	   c. Totally dependent in transfer self-performance (G0110B1 = [4, 7, 8]).
	   d. Totally dependent in locomotion on unit self-performance (G0110E1 = [4, 7, 8]).
	 4. Resident does not qualify as high risk (see #3 above) and **both** of the following two conditions are true for the target assessment:
	   a. C0500 = [99, ^, -], **and**
	   b. C0700 = [^, -] *or* C1000 = [^, -].
	 5. Resident does not qualify as high risk (see #3 above) and **any** of the following three conditions are true:
	   a. G0110A1 = [-].
	   b. G0110B1 = [-].
	   c. G0110E1 = [-].
	 6. Resident is comatose (B0100 = [1]) *or* comatose status is missing (B0100 = [-]) on the target assessment.
	 7. Resident has an indwelling catheter (H0100A = [1]) *or* indwelling catheter status is missing (H0100A = [-]) on the target assessment.
	 8. Resident has an ostomy (H0100C = [1]) *or* ostomy status is missing (H0100C = [-]) on the target assessment.
		Not applicable.

MDS 3.0 Quality Measures

USER'S MANUAL

APPENDIX E

Surveyor Quality Measures

(v11.0 03-20-2017)
Effective April 1, 2017

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Surveyor Quality Measures

Quality measure reports are available to State surveyors and facility staff through CMS's CASPER reporting system. These reports contain a subset of the measures that are documented in the main body of this user's guide plus several additional measures that are available only on the CASPER reports.

The table below lists the measures that are contained on the CASPER QM reports and indicates whether each measure is documented above (in the main body of this user guide) or within this appendix. The first column of the table shows the label for the measure that is used on the CASPER reports. The next column shows whether the measure uses the short- or long-stay sample. The third column indicates the unique CMS identification number. The fourth column shows the NQF ID for the measure, if available. The final column indicates whether the measure is defined in the main body of this manual ("above") or whether it is defined in this appendix (Appendix E). The specifications for the measures that are unique to the CASPER reports appear after the table.

Table E1: Measures Listed on CASPER QM Reports

Measure Label	Short/Long Stay	CMS ID	NQF ID	Specs Definition
SR Mod/Severe Pain (S)	Short	N001.01	0676	Above
SR Mod/Severe Pain (L)	Long	N014.02	0677	Above
Hi-risk Pres Ulcer (L)	Long	N015.01	0679	Above
New/worse Pres Ulcer (S)	Short	N002.02	0678	Above
Phys restraints (L)	Long	N027.01	0687	Above
Falls (L)	Long	N032.01		Appendix E
Falls w/Maj Injury (L)	Long	N013.01	0674	Above
Antipsych Med (S)	Short	N011.01		Above
Antipsych Med (L)	Long	N031.02		Above
Antianxiety/Hypnotic (L)	Long	N033.01		Appendix E
BehavSx affect Others (L)	Long	N034.01		Appendix E
Depress Sx (L)	Long	N030.01	0690	Above
UTI (L)	Long	N024.01	0684	Above
Cath Insert/Left Bladder (L)	Long	N026.02	0686	Above
Lo-Risk Lose B/B Con (L)	Long	N025.01	0685	Above
Excess Wt Loss (L)	Long	N029.01	0689	Above
Incr ADL Help (L)	Long	N028.01	0688	Above

MDS 3.0 QM Measure: Prevalence of Falls (Long Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N032.01 NQF: none **This measure reports the percentage of long-stay residents who have had a fall during their episode of care.**	*Numerator* Long-stay residents with one or more look-back assessments that indicate the occurrence of a fall (J1800 = [1]). *Denominator* All long-stay nursing home residents with one or more look-back scan assessments except those with exclusions. *Exclusions* Resident is excluded if the following is true for all of the look-back scan assessments: The occurrence of falls was not assessed (J1800 = [-]).	Not applicable.

MDS 3.0 Measure: Prevalence of Antianxiety/Hypnotic Use (Long Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES

CMS: N033.01
NQF: none
 	
This measure reports the percentage of long-stay residents who are receiving antianxiety medications or hypnotics but do not have evidence of psychotic or related conditions in the target period.
	Numerator
	Long-stay residents with a selected target assessment where *any* of the following conditions are true:
	
	1. For assessments with target dates on or before 03/31/2012:
	   1.1. Antianxiety medications received (N0400B = [1]), *or*
	   1.2. Hypnotic medications received (N0400D = [1]).
	
	2. For assessments with target dates on or after 04/01/2012:
	   2.1. Antianxiety medications received (N0410B = [1, 2, 3, 4, 5, 6, 7]), *or*
	   2.2. Hypnotic medications received (N0410D = [1, 2, 3, 4, 5, 6, 7]).
	
	Denominator
	All long-stay residents with a selected target assessment, except those with exclusions.
	
	Exclusions
	1. The resident did not qualify for the numerator and **any** of the following is true ::
	   1.1. For assessments with target dates on or before 03/31/2012: N0400B = [-] **or** N0400D = [-].
	   1.2. For assessments with target date on or after 04/01/2012: N0410B = [-] **or** N0410D = [-].
	
	2. **Any** of the following related conditions are present on the target assessment (unless otherwise indicated):
	   2.1. Schizophrenia (I6000 = [1]).
	   2.2. Psychotic disorder (I5950 = [1]).
	   2.3. Manic depression (bipolar disease) (I5900 = [1]).
	   2.4. Tourette's syndrome (I5350 = [1]).
	   2.5. Tourette's syndrome (I5350 = [1]) on the prior assessment if this item is not active on the target assessment and if a prior assessment is available.
	   2.6. Huntington's disease (I5250 = [1]).
	   2.7. Hallucinations (E0100A = [1]).
	   2.8. Delusions (E0100B = [1]).
	   2.9. Anxiety disorder (I5700 = [1]).
	   2.10. Post-traumatic stress disorder (I6100 = [1]).
	   2.11. Post-traumatic stress disorder (I6100 = [1]) on the prior assessment if this item is not active on the target assessment and if a prior assessment is available.
		Not applicable.

MDS 3.0 Measure: Prevalence of Behavior Symptoms Affecting Others (Long Stay)

MEASURE DESCRIPTION	MEASURE SPECIFICATIONS	COVARIATES
CMS: N034.01 **NQF: none** **This measure reports the percentage of long-stay residents who have behavior symptoms that affect others during the target period.**	*Numerator* Long-stay residents with a selected target assessment where *any* of the following conditions are true: 1. The presence of physical behavioral symptoms directed towards others (E0200A = [1, 2, 3]), *or* 2. The presence of verbal behavioral symptoms directed towards others (E0200B = [1, 2, 3]), *or* 3. The presence of other behavioral symptoms not directed towards others (E0200C = [1, 2, 3]), *or* 4. Rejection of care (E0800 = [1, 2, 3]), *or* 5. Wandering (E0900 = [1, 2, 3]). *Denominator* All residents with a selected target assessment, except those with exclusions. *Exclusions* Resident is not in numerator and *any* of the following is true: 1. The target assessment is a discharge (A0310F = [1011]. 2. E0200A is equal to [-, ^]. 3. E0200B is equal to [-, ^]. 4. E0200C is equal to [-, ^]. 5. E0800 is equal to [-, ^]. 6. E0900 is equal to [-, ^].	Not applicable.

MDS 3.0 Quality Measures

USER'S MANUAL

APPENDIX F

Specifications for the Facility Characteristics Report

(v11.0 03-20-2017)
Effective April 1, 2017

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Specifications for Facility Characteristics Report

Record Selection

The Facility Characteristic Report is populated using data from records selected using the standard QM episode and record selection logic as given in the QM User's Manual. The Facility Characteristics measures can be processed with the QM measures. Each Facility Characteristic measure is computed using all residents (both short-stay and long-stay residents).

Most of the Facility Characteristic measures are populated using data from a look-back scan of the assessment records selected for each resident. For each resident, the look-back scan begins with the target assessment selected for QM processing. The resident's records are scanned in reverse chronological order (by ARD) and all data items required for the Facility Characteristics report are populated from data that are available from each assessment. As assessments are scanned, each required item is initially populated with the item value from the target assessment. If the value from the target assessment is a valid (non-missing) value, then the scan for that item stops. If the value for the target assessment is not a valid value (a missing value), then the scan continues with the earlier assessments in reverse chronological order. Once a valid value is found for an item, that value is used for the report (i.e., the value is not changed if additional values are present in earlier records).

A "valid value" is any value that is one of the "normal" responses to an item. Missing non-valid values are:
1. A dash ("-") indicating that the item was not assessed.
2. A caret ("^") indicating that the item was skipped.
3. A null (.) indicating that the item is inactive.

Note that the diagnosis code items (I8000A through I8000J) are not used in the measure specifications below and are therefore not included in the look-back scan.

For each resident, the look-back scan continues until any of the following conditions is satisfied:

- All required items have been populated with valid values, as defined above, *or*
- All selected records for a resident have been scanned.

Note that scanning stops for a resident as soon as *either* of these conditions is satisfied.

Measure Specifications

The definitions in the following table are applied to a look-back scan of the records selected for a resident as described in the prior section on *Record Selection*. Counts of the number of residents within each facility that meet the numerator criteria for each measure below are used as the numerator to produce facility percentages for the report.

The denominator used to produce the facility percentages in the report will vary for different measures, depending on missing data. If missing data precludes determination of the status for a

measure as indicated in the "Exclusions" section, then the resident is excluded from both the numerator and denominator in the facility percentage.

Table F1: Facility Characteristics Report Measure Definitions

Measure	Description and Definition
Gender	
Male	**Description:** Resident is included if Item A0800 (Gender) is equal to **1** (Male). Records with dashes (not assessed) in A0800 are excluded from the male/female counts. **Numerator:** A0800 = 1 (Male). **Exclusions:** A0800 missing
Female	**Description:** Resident is included if Item A0800 (Gender) is equal to **2** (Female). Records with dashes (not assessed) in A0800 are excluded from the male/female counts. **Numerator:** A0800 = 2 (Female). **Exclusions:** A0800 missing
Age	

	Calculation of Age, based on Items A0900 (Birth Date) and A2300 (Assessment Reference Date ARD):
	IF (MONTH(A2300) > MONTH(A0900)) OR
	  (MONTH(A2300) = MONTH(A0900) AND
	   DAY(A2300) >= DAY(A0900)) THEN
	Age = YEAR(A2300)-YEAR(A0900) ELSE
	Age = YEAR(A2300)-YEAR(A0900)-1

<25 years old	**Description:** Age less than 25 years old. **Numerator:** Record triggers if age < 25.
25-54 years old	**Description:** Age of 25 through 54 years old. **Numerator:** Record triggers if age >= 25 and <= 54.
55-64 years old	**Description:** Age of 55 through 64 years old. **Numerator:** Record triggers if age >= 55 and <= 64.
65-74 years old	**Description:** Age of 65 to 74 years old. **Numerator:** Record triggers if age >= 65 and <= 74.
75-84 years old	**Description:** Age of 75 through 84 years old. **Numerator:** Record triggers if age >= 75 and <= 84.

(continued)

Table F1: Facility Characteristics Report Measure Definitions (continued)

Measure	Description and Definition
85+ years old	**Description:** Age of 85 years of age or older. **Numerator:** Record triggers if age >= 85.
Diagnostic Characteristics	
Psychiatric Diagnosis	**Description:** Resident is included as having a psychiatric diagnosis if any of the following is true: • Any psychiatric mood disorders are checked (=1) in items I5700 through I6100, *or* • Item I5350 (Tourette's Syndrome) is checked (=1), *or* • Item I5250 (Huntington's Disease) is checked (=1). **Numerator:** • Any of the following items are checked (-1): I5250, I5350, I5700 through I6100. **Exclusions:** No value I5250, I5350, I5700 through I6100 = 1 and *any* value I5250, I5350, I5700 through I6100 is missing
Intellectual Disability (ID) (Mental retardation as defined at 483.45(a)) or Developmental Disability (DD)	**Description:** Resident is counted as having ID/DD if *any* of the following items are checked: • A1550A (Down syndrome). • A1550B (Autism). • A1550C (Epilepsy). • A1550D (Other organic condition related to ID/DD). • A1550E (ID/DD with no organic condition). **Numerator:** A1550A, B, C, D, or E is checked (=1). **Exclusions:** No value A1550A, B, C, D, or E = 1 and *any* value A1550A, B, C, D, or E missing
Hospice	**Description:** Resident is included if Item O0100K2 (Hospice care) is checked. **Numerator:** O0100K2 is checked (=1). **Exclusions:** O0100K2 missing

(continued)

Measure	Description and Definition
Prognosis	
Life expectancy of less than 6 months	**Description:** Resident is included if item J1400 (Prognosis) is coded **1** (Yes). **Numerator:** J1400 = 1 (Yes). **Exclusions:** J1400 missing
Discharge Plan	
Discharge planning IS NOT already occurring for the resident to return to the community.	**Description:** Resident is included if Item Q0400A (Discharge Plan) is coded **0** (No). **Numerator:** Q0400A = 0 (No). **Exclusions:** Q0400A missing
Discharge planning IS already occurring for the resident to return to the community.	**Description:** Resident is included if Item Q0400A (Discharge Plan) is coded **1** (Yes). **Numerator:** Q0400A = 1 (Yes). **Exclusions:** Q0400A missing
Referral	
Referral not needed.	**Description:** Resident is included if Item Q0600 (Referral) is coded **0** (No - Referral not needed). **Numerator:** Q0600 = 0 (No - Referral not needed). **Exclusions:** Q0600 missing
Referral is or may be needed, but has not been made.	**Description:** Resident is included if Item Q0600 (Referral) is coded **1** (Yes – Referral is or may be needed). **Numerator:** Q0600 = 1 (No - Referral is or may be needed). **Exclusions:** Q0600 missing
Referral has been made.	**Description:** Resident is included if Item Q0600 (Referral) is coded **2** (Yes - Referral made). **Numerator:** Q0600 = 2 (Yes - Referral made). **Exclusions:** Q0600 missing

(continued)

Table F1: Facility Characteristics Report Measure Definitions (continued)

Measure	Description and Definition
Type of Entry	
Admission	**Description:** Resident is included if Item A1700 (Type of Entry) is coded **1**, (Admission). **Numerator:** A1700 = 1 (Admission). **Exclusions:** A1700 missing
Reentry	**Description:** Resident is included if Item A1700 (Type of Entry) is coded **2**, (Reentry). **Numerator:** A1700 = 2 (Reentry). **Exclusions:** A1700 missing
Entered Facility From	
Community (private home/apartment board/care, assisted living, group home)	**Description:** Resident is included if Item A1800 (Entered From) is coded **01** (Community). **Numerator:** A1800 = 01 (Community). **Exclusions:** A1800 missing
Another nursing home or swing bed	**Description:** Resident is included if Item A1800 (Entered From) is coded **02** (Another nursing home or swing bed). **Numerator:** A1800 = 02 (Another nursing home or swing bed). **Exclusions:** A1800 missing
Acute hospital	**Description:** Resident is included if Item A1800 (Entered From) is coded **03** (Acute hospital). **Numerator:** A1800 = 03 (Acute hospital). **Exclusions:** A1800 missing
Psychiatric hospital	**Description:** Resident is included if Item A1800 (Entered From) is coded **04** (Psychiatric hospital). **Numerator:** A1800 = 04 (Psychiatric hospital). **Exclusions:** A1800 missing
Inpatient rehabilitation facility	**Description:** Resident is included if Item A1800 (Entered From) is coded **05** (Inpatient rehabilitation facility). **Numerator:** A1800 = 05 (Inpatient rehabilitation facility). **Exclusions:** A1800 missing

(continued)

Table F1: Facility Characteristics Report Measure Definitions (continued)

Measure	Description and Definition
ID/DD facility	**Description:** Resident is included if Item A1800 (Entered From) is coded **06** (ID/DD facility). **Numerator:** A1800 = 06 (ID/DD facility). **Exclusions:** A1800 missing
Hospice	**Description:** Resident is included if Item A1800 (Entered From) is coded **07** (Hospice). **Numerator:** A1800 = 07 (Hospice). **Exclusions:** A1800 missing
Long Term Care Hospital (LTCH)	**Description:** Resident is included if Item A1800 (Entered From) is coded **09** (Long Term Care Hospital (LTCH)). **Numerator:** A1800 = 09 (Long Term Care Hospital (LTCH)). **Exclusions:** A1800 missing
Other	**Description:** Resident is included if Item A1800 (Entered From) is coded **99** (Other). **Numerator:** A1800 = 99 (Other). **Exclusions:** A1800 missing