# Design for *Nursing Home Compare* Five-Star Quality Rating System:

# Technical Users' Guide

# February 2015

**CMS**

**CENTERS for MEDICARE & MEDICAID SERVICES**
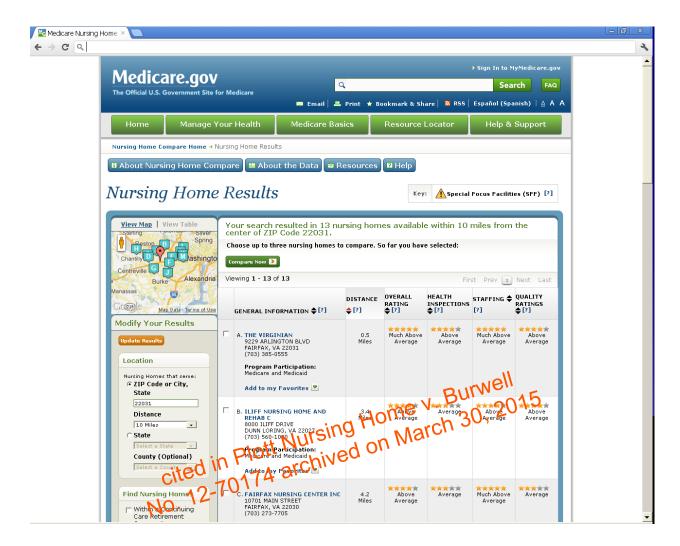
# Introduction

In December 2008, The Centers for Medicare & Medicaid Services (CMS) enhanced its *Nursing Home Compare* public reporting site to include a set of quality ratings for each nursing home that participates in Medicare or Medicaid. The ratings take the form of several "star" ratings for each nursing home. The primary goal of this rating system is to provide residents and their families with an easy way to understand assessment of nursing home quality, making meaningful distinctions between high and low performing nursing homes.

This document provides a comprehensive description of the design for the *Nursing Home Compare* Five-Star Quality Rating System. This design was developed by CMS with assistance from Abt Associates, invaluable advice from leading researchers in the long-term care field who comprise the Technical Expert Panel (TEP) for this project, and numerous ideas contributed by consumer and provider groups. All of these organizations and groups have continued to contribute their input as the rating system has been refined and updated to incorporate newly available data. We believe the Five-Star Quality Rating System continues to offer valuable and comprehensible information to consumers based on the best data currently available. The rating system features an Overall Quality Rating of one to five stars based on facility performance for three types of measures, each of which has its own five-star rating:

- ***Health Inspections - Measures based on outcomes from State health inspections:*** Facility ratings for the health inspection domain are based on the number, scope, and severity of deficiencies identified during the three most recent annual inspection surveys, as well as substantiated findings from the most recent 36 months of complaint investigations. All deficiency findings are weighted by scope and severity. This measure also takes into account the number of revisits required to ensure that deficiencies identified during the health inspection survey have been corrected.

- ***Staffing - Measures based on nursing home staffing levels:*** Facility ratings on the staffing domain are based on two measures: 1) Registered nurse (RN) hours per resident day; and 2) total staffing hours (RN+ licensed practical nurse (LPN) + nurse aide hours) per resident day. Other types of nursing home staff such as clerical or housekeeping staff are not included in these staffing numbers. These staffing measures are derived from the CMS CASPER Certification and Survey Provider Enhanced Reports (CASPER) system, and are case-mix adjusted based on the distribution of MDS 3.0 assessments by RUG-III group.

- ***QMs - Measures based on Minimum Data Set (MDS) quality measures (QMs):*** Facility ratings for the quality measures are based on performance on 11 of the 18 QMs that are currently posted on the *Nursing Home Compare* web site, and that are based on MDS 3.0 resident assessments. These include 8 long-stay measures and 3 short-stay measures.

In recognition of the multi-dimensional nature of nursing home quality, *Nursing Home Compare* displays information on facility ratings for each of these domains alongside the overall performance rating. Further, in addition to the overall staffing five-star rating mentioned above, a five-star rating for RN staffing is also displayed separately on the Nursing Home Compare website, when users seek more information on the staffing component.

An example of the rating information included on *Nursing Home Compare* is shown in the figure below. Users of the web site can drill down on each domain to obtain additional details on facility performance.

A companion document to this Technical Users' Guide (*Nursing Home Compare* – Five Star Quality Rating System: Technical Users' Guide – State-Level Cut Point Tables) provides the data for the state-level cut points for the star ratings included in the health inspection. The data table in the companion document will be updated monthly.  Cut points for the staffing ratings and for the QM ratings have been fixed and do not vary monthly.  Data tables giving the cut points for those ratings are included in the Appendix of this Technical Users' Guide.

# Methodology for Constructing the Ratings

## Health Inspection Domain

Nursing homes that participate in the Medicare or Medicaid programs have an onsite standard ("comprehensive") survey annually *on average*, with very rarely more than fifteen months elapsing between surveys for any one particular nursing home.  Surveys are unannounced and are conducted by a team of health care professionals.  State survey teams spend several days in the nursing home to assess whether the nursing home is in compliance with federal requirements.  Certification surveys provide a comprehensive assessment of the nursing home, including assessment of such areas as medication management, proper skin care, assessment of resident needs, nursing home administration, environment,

kitchen/food services, and resident rights and quality of life.  The methodology for constructing the health inspection rating is based on the most recent three standard surveys for each nursing home, results from any complaint investigations during the most recent three-year period, and any repeat revisits needed to verify that required corrections have brought the facility back into compliance. The Five-Star Quality Rating System uses more than 200,000 records for the health inspection domain alone.

## Scoring Rules

A health inspection score is calculated based on points assigned to deficiencies identified in each active provider's current health inspection survey and the two prior surveys, as well as deficiency findings from the most recent three years of complaints information and survey revisits.

- *Health Inspection Results*: Points are assigned to individual health deficiencies according to their scope and severity – more points are assigned for more serious, widespread deficiencies, and fewer points for less serious, isolated deficiencies (see Table 1).  If the deficiency generates a finding of substandard quality of care, additional points are assigned. If the status of the deficiency is "past non-compliance" and the severity is "immediate jeopardy" (i.e., J-,K- or L-level), then points associated with a G- level deficiency are assigned.  Deficiencies from Life Safety surveys are not included in calculations for the Five-Star rating. Deficiencies from Federal Monitoring surveys are not reported on *Nursing Home Compare* or included in *Five Star* calculations either.

- *Repeat Revisits - Number of repeat revisits required to confirm that correction of deficiencies have restored compliance*: No points are assigned for the first revisit; points are assigned only for the second, third, and fourth revisits and are proportional to the health inspection score for the survey cycle (Table 2).  If a provider fails to correct deficiencies by the time of the first revisit, then these additional revisit points are assigned up to 85 percent of the health inspection score for the fourth revisit.  CMS experience is that providers that fail to demonstrate restored compliance with safety and quality of care requirements during the first revisit have lower quality of care than other nursing homes. More revisits are associated with more serious quality problems.

We calculate a total health inspection score for facilities based on the facility's weighted deficiency score and number of repeat revisits needed.  Note that a lower survey score corresponds to fewer deficiencies and revisits, and thus better performance on the health inspection domain.  In calculating the total domain score, more recent surveys are weighted more heavily than earlier surveys: the most recent period (cycle 1) is assigned a weighting factor of 1/2, the previous period (cycle 2) has a weighting factor of 1/3, and the second prior survey (cycle 3) has a weighting factor of 1/6.  The weighted time period scores are then summed to create the survey score for each facility.

Complaint surveys are assigned to a time period based on the calendar year in which the complaint survey occurred.  Complaint surveys that occurred within the most recent 12 months preceding the current website update date receive a weighting factor of 1/2; those from 13-24 months ago have a weighting factor of 1/3, and those from 25-36 months ago have a weighting factor of 1/6.  There are some deficiencies that appear on both standard and complaint surveys.  To avoid potential double-counting, deficiencies that appear on complaint surveys that are conducted within 15 days of a standard survey (either prior to or after the standard survey) are counted only once.  If the scope or severity differs on the two surveys, the highest scope-severity combination is used. Points from complaint deficiencies from a given period are added to the health inspection score before calculating revisit points, if applicable.

For facilities missing data for one period, the health inspection score is determined based on the periods for which data are available, using the same relative weights, with the missing (third) survey weight

distributed proportionately to the existing two surveys.  Specifically, when there are only two standard health surveys, the most recent receives 60 percent weight and the prior receives 40 percent weight. Facilities with only one standard health inspection are considered not to have sufficient data to determine a health inspection rating and are set to missing for the health inspection domain.  For these facilities, no composite rating is assigned and no ratings are reported for the staffing or QM domains even if these ratings are available.

**Table 1**
**Health Inspection Score: Weights for Different Types of Deficiencies**

| Severity | Scope | | |
|---|---|---|---|
| | **Isolated** | **Pattern** | **Widespread** |
| Immediate jeopardy to resident health or safety | **J** 50 points* (75 points) | **K** 100 points* (125 points) | **L** 150 points* (175 points) |
| Actual harm that is not immediate jeopardy | **G** 20 points | **H** 35 points (40 points) | **I** 45 points (50 points) |
| No actual harm with potential for more than minimal harm that is not immediate jeopardy | **D** 4 points | **E** 8 points | **F** 16 points (20 points) |
| No actual harm with potential for minimal harm | **A** 0 point | **B** 0 points | **C** 0 points |

Note:  Figures in parentheses indicate points for deficiencies that are for substandard quality of care.
Shaded cells denote deficiency scope/severity levels that constitute substandard quality of care if the requirement which is not met is one that falls under the following federal regulations: 42 CFR 483.13 resident behavior and nursing home practices; 42 CFR 483.15 quality of life; 42 CFR 483.25 quality of care.
* If the status of the deficiency is "past non-compliance" and the severity is Immediate Jeopardy, then points associated with a 'G-level' deficiency (i.e. 20 points) are assigned.
Source: Centers for Medicare & Medicaid Services

**Table 2**
**Weights for Repeat Revisits**

| Revisit Number | Noncompliance Points |
|---|---|
| First | 0 |
| Second | 50 percent of health inspection score |
| Third | 70 percent of health inspection score |
| Fourth | 85 percent of health inspection score |

Note: The health inspection score includes points from deficiencies cited on the standard annual survey and complaint surveys during a given survey cycle.

## Rating Methodology

Health inspections are based on federal regulations, which surveyors implement using national interpretive guidance and a federally-specified survey process.  Federal staff train state surveyors and oversee state performance.  The federal oversight includes quality checks based on a 5% sample of the state surveys, in which federal surveyors either accompany state surveyors or replicate the survey within 60 days of the state and then compare results.  These control systems are designed to optimize consistency

in the survey process.  Nonetheless there remains some variation between states.  Such variation derives from many factors, including:

- *Survey Management:* Variation among states in the skill sets of surveyors, supervision of surveyors, and the survey processes;

- *State Licensure*: State licensing laws set forth different expectations for nursing homes and affect the interaction between State enforcement and federal enforcement (for example, a few states conduct many complaint investigations based on state licensure, and issue citations based on State licensure rather than on the federal regulations);

- *Medicaid Policy:* Medicaid pays for the largest proportion of long term care in nursing homes. State nursing home eligibility rules, payment, and other policies in the state-administered Medicaid program create differences in both quality of care and enforcement of that quality.

For the above reasons, Five-Star quality ratings on the health inspection domain are based on the relative performance of facilities within a state.  This approach helps control for variation among states.  Facility ratings are determined using these criteria:

- The top 10 percent (lowest 10 percent in terms of health inspection deficiency score) in each state receive a five-star rating.

- The middle 70 percent of facilities receive a rating of two, three, or four stars, with an equal number (approximately 23.33 percent) in each rating category.

- The bottom 20 percent receive a one-star rating.

Cut points are re-calibrated each month so that the distribution of star ratings within States remains relatively constant over time.  However, the rating for a given facility is held constant until there is a change in the weighted health inspection score for that facility, regardless of changes in the statewide distribution. Items that could change the health inspection score include the following:
- A new health inspection survey;
- A complaint investigation that results in one or more deficiency citations;
- A 2nd, 3rd or 4th revisit;
- Resolution of an Informal Dispute Resolutions (IDR) or Independent Informal Dispute Resolutions (IIDR) resulting in changes to the scope and/or severity of deficiencies;
- The "aging" of complaint deficiencies.  Specifically, as noted above, complaint surveys are assigned to a time period based on the calendar year in which the complaint survey occurred; thus, when a complaint deficiency ages into a prior period, it receives less weight in the scoring process, resulting in a lower health inspection score and potentially a change in health inspection rating.

In the very rare case that a State or territory has fewer than five facilities upon which to generate the cut points, the national distribution of health inspection scores is used. Cut points for the health inspection ratings are available in the companion document to this Technical Users' Guide: *Nursing Home Compare – Five Star Quality Rating System: Technical Users' Guide – State-Level Cut Point Tables.*  The data can be found in Table CP1.

# Staffing Domain

There is considerable evidence of a relationship between nursing home staffing levelsand resident outcomes. The CMS Staffing Study found a clear association between nurse staffing ratios and nursing home quality of care, identifying specific ratios of staff to residents below which residents are at substantially higher risk of quality problems.[1]

The rating for staffing is based on two case-mix adjusted measures:

1. Total nursing hours per resident day (RN + LPN + nurse aide hours)
2. RN hours per resident day

The source data for the staffing measures is CMS form CMS-671 (Long Term Care Facility Application for Medicare and Medicaid) from CASPER. The resident census is based on the count of total residents from CMS form CMS-672 (Resident Census and Conditions of Residents). The specific fields that are used in the RN, LPN, and nurse aide hours calculations are:

- RN hours: Includes registered nurses (tag number F41 on the CMS-671 form), RN director of nursing (F39), and nurses with administrative duties (F40).
- LPN hours: Includes licensed practical/licensed vocational nurses (F42)
- Nurse aide hours: Includes certified nurse aides (F43), aides in training (F44), and medication aides/technicians (F45)

Note that the CASPER staffing data include both facility employees (full time and part time) and individuals under an organization (agency) contract or an individual contract. The CASPER staffing data do not include "private duty" nursing staff reimbursed by a resident or his/her family. Also not included are hospice staff and feeding assistants.

A set of exclusion criteria are used to identify facilities with unreliable CASPER staffing data, and neither staffing data nor a staffing rating are reported for these facilities (displaying "Data Not Available" on the Nursing Home Compare website. The exclusion criteria are intended to identify facilities with unreliable CASPER staffing data and facilities with outlier staffing levels.

The resident census, used in the denominator of the staffing calculations, uses data reported in block F78 of the CMS-672 form. This includes the total residents in the nursing facility and the number for whom a bed is being maintained on the day the nursing home survey begins (bed-holds). Bed-holds typically involve residents temporarily away in a hospital or on leave. The CMS-671 form separately collects hours for full-time, part-time, and contract staff. These hours are converted to full-time equivalents (FTE), which are summed across full time, part time and contract staff and converted to hours per resident per day (HRD) as follows:

**HRD = total hours for each nursing discipline/resident census/14 days**

This calculation is done separately for RNs, LPNs and Nurse Aides as described above, and all three of these are summed to calculate total nursing hours.

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[1] Kramer AM, Fish R. "The Relationship Between Nurse Staffing Levels and the Quality of Nursing Home Care." Chapter 2 in Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes: Phase II Final Report. Abt Associates, Inc., Winter 2001.

## Case-Mix Adjustment

The measures are adjusted for case-mix differences based on the Resource Utilization Group (RUG-III) case-mix system.  Data from the CMS Staff Time Measurement Studies were used to measure the number of RN, LPN, and nurse aide minutes associated with each RUG-III group (using the 53 group version of RUG-III).  Case- mix adjusted measures of hours per resident day were calculated for each facility for each staff type using this formula:

$$\text{Hours}_{Adjusted} = (\text{Hours}_{Reported}/\text{Hours}_{Expected}) * \text{Hours}_{National\ Average}$$

where Hours $_{National\ Average}$ is the mean across all facilities of the reported hours per resident day for a given staff type.  The expected values are based on the distribution of residents by RUG-III group in the quarter closest to the date of the most recent standard survey (when the staffing data were collected) and measures of the expected RN, LPN, and nurse aide hours that are based on data from the CMS 1995 and 1997 Staff Time Measurement Studies (see Table A1).  The distribution of residents by RUG-III group is determined using the most recent MDS assessment for current residents of the nursing home on the last day of the quarter.

The data used in the RUG calculations are based on a summary of MDS information for residents currently in the nursing home. The MDS assessment information for each active nursing home resident is consolidated to create a profile of the most recent standard information for the resident. An active resident is defined as a resident who, on the last day of the quarter, has no discharge assessment and whose most recent MDS transaction is less than 180 days old (this allows for 93 days between quarterly assessments, 14 days for completion, 31 days for submission after completion, and about one month grace period for late assessments). The active resident information can represent a composite of items taken from the most recent comprehensive, full quarterly, PPS, and admission MDS assessments. Different items may come from different assessments. The intention is to create a profile with the most recent standard information for an active resident, regardless of source of information. These data are used to place each resident in a RUG category.

For the Five-Star rating, a "draw" of the most recent RUG category distribution data is done for every nursing facility on the last business day of the last month of each quarter. The Five-Star rating makes use of the distribution for the quarter in which the staffing data were collected.  For each facility, a "target" date that is 7 days prior to the most recent standard survey date is assigned. The rationale for this target is that the staffing data reported for CASPER covers the two-week period prior to the survey, with 7 days being the midpoint of that interval. If RUG data are available for the facility for the quarter containing that survey "target" date, that quarter of RUG data is used for the case mix adjustment. In instances when the quarter of RUG data containing the survey target date is not available for a given facility, the quarter of available RUG data that is closest to that target date - either before or after – is selected. Closest is defined as having the smallest absolute value for the difference between the survey target date and the midpoint of the available RUG quarter(s).  If the RUG data for the quarter in which the survey was conducted becomes available subsequently, the staffing rating will be recalculated to reflect these more appropriate data, and this might change the staffing rating. The staffing rating calculated using staffing data and RUG data from the same quarter will be held constant for a nursing home until new staffing data are collected for the facility.

Expected hours are calculated by summing the nursing times (from the CMS Time Study) connected to each RUG category across all residents in the category and across all categories.  The hours are then

divided by the number of residents included in the calculations. The result is the "expected" number of hours for the nursing home.

The "reported" hours are those reported by the facility on the CMS-671 form for their most recent survey, while the "national average" hours (shown in Table 3) represent the unadjusted national mean of the reported hours across all facilities for December, 2011. .

**Table 3**
**National Average Hours per Resident Day Used To Calculate Adjusted Staffing (as of April 2012)**

| Type of staff | National average hours per resident per day |
|---|---|
| Total nursing staff (Aides + LPNs + RNs) | 4.0309 |
| Registered nurses | 0.7472 |

The calculations of "expected", "reported", and "national average" hours are performed separately for RNs and for all staff delivering nursing care (RNs, LPNs, and CNAs). Adjusted hours are also calculated for both groups using the formula discussed earlier in this section.

A downloadable file that contains the "expected", "reported" and case-mix adjusted hours used in the staffing calculations is available at: http://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/CertificationandComplianc/FSQRS.html . The file, referred to as the "Expected and Adjusted Staff Time Values Data Set", contains data for both RNs and total staff for each individual nursing home.

**Scoring Rules**

The two staffing measures (RN and total nursing staff) are given equal weight. For each of RN staffing and total staffing, a 1 to 5 rating is assigned based on a percentile-based method (where percentiles are based on the distribution for freestanding facilities[2]) (Table 4). For each facility, the overall Staffing Rating is assigned based on the combination of the two staffing ratings (Table 5).

The percentile cut points (data boundaries between each star category) were determined using the data available as of December 2011. This was the first update of the cut points since December 2008 and was necessary because of changes in the expected staffing due to MDS 3.0. The cut points were set so that the changes in expected staffing due to MDS 3.0 would not impact the overall distribution of the five-star ratings; that is, they were selected so that the proportion of nursing homes in each rating category would initially (i.e. for April 2012) be the same as it was in December 2011. CMS will evaluate whether further rebasing is needed on an annual basis. A major advantage of using fixed cut-points is that it allows the distribution of staffing ratings to change over time. Nursing homes that seek to improve their staffing rating, for example, can ascertain the increased levels at which they would earn a higher star rating for the staffing domain.

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[2]   The distribution for freestanding facilities was used because of concerns about the reliability of staffing data for some hospital-based facilities.

**Table 4**

**National Star Cut Points for Staffing Measures, Based on Case-Mix Adjusted Hours per Resident Day (updated April 2012)**

| Staff type | 1 star | 2 stars lower | 2 stars upper | 3 stars lower | 3 stars upper | 4 stars lower | 4 stars upper | 5 stars |
|---|---|---|---|---|---|---|---|---|
| **RN** | < 0.283 | $\geq$0.283 | < 0.379 | $\geq$0.379 | < 0.513 | $\geq$0.513 | < 0.710 | $\geq$0.710 |
| **Total** | < 3.262 | $\geq$3.262 | < 3.661 | $\geq$3.661 | < 4.173 | $\geq$4.173 | < 4.418 | $\geq$4.418 |

Note: Adjusted staffing values are rounded to three decimal places before the cut points are applied.

## Rating Methodology

Facility ratings for overall staffing are based on the combination of RN and total nurse (RNs, LPNs, LVNs, and CNAs) staffing ratings as shown in Table 5.  To receive a five-star rating, facilities must meet or exceed the five-star level for both RN and total staffing.  To receive a four-star staffing rating, facilities must receive at least a three-star rating on both RN and total nurse staffing and must receive a rating of four or five stars on one of these domains.

**Table 5**

**Staffing Points and Rating (updated February 2015)**

| RN rating and hours | | Total nurse staffing rating and hours (RN, LPN and nurse aide) | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| | | <3.262 | 3.262 – 3.660 | 3.661 – 4.172 | 4.173 – 4.417 | $\geq$4.418 |
| **1** | **<0.283** | ★ | ★ | ★★ | ★★ | ★★★ |
| **2** | **0.283 – 0.378** | ★ | ★★ | ★★★ | ★★★ | ★★★ |
| **3** | **0.379 – 0.512** | ★★ | ★★★ | ★★★ | ★★★★ | ★★★★ |
| **4** | **0.513 – 0.709** | ★★ | ★★★ | ★★★★ | ★★★★ | ★★★★ |
| **5** | **$\geq$0.710** | ★★★ | ★★★ | ★★★★ | ★★★★ | ★★★★★ |

Note: Adjusted staffing values are rounded to three decimal places before the cut points are applied.

# Quality Measure Domain

A set of quality measures (QMs) has been developed from Minimum Data Set (MDS)-based indicators to describe the quality of care provided in nursing homes. These measures address a broad range of functioning and health status in multiple care areas.  The facility rating for the QM domain is based on performance on a subset of 11 (out of 18) of the QMs currently posted on Nursing Home Compare.   The measures were selected based on their validity and reliability, the extent to which facility practice may affect the measure, statistical performance, and importance.  As of February 2015, two measures for use of antipsychotic medications (one for short-stay residents and one for long-stay residents), have been incorporated into the Five-Star Rating System.

Long-Stay Residents:

- Percent of residents whose need for help with activities of daily living has increased
- Percent of high risk residents with pressure ulcers (sores)
- Percent of residents who have/had a catheter inserted and left in their bladder
- Percent of residents who were physically restrained
- Percent of residents with a urinary tract infection
- Percent of residents who self-report  moderate to severe pain
- Percent of residents experiencing one or more falls with major injury
- Percent of residents who received an antipsychotic medication

Short-stay residents:

- Percent of residents with pressure ulcers (sores) that are new or worsened
- Percent of residents who self-report moderate to severe pain
- Percent of residents who newly received an antipsychotic medication

Table 6 contains more information on these measures.  Technical specifications for the complete set of QMs are available at: https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/NursingHomeQualityInits/Downloads/MDS-30-QM-User's-Manual-V80.pdf

Values for three of the QMs (catheter, the long-stay pain measure, and short-stay pressure ulcers) are risk adjusted, using resident-level covariates that adjust for factors associated with differences in the score for the QM.  For example, the catheter risk-adjustment model is based on an indicator of bowel incontinence or pressure sores on the prior assessment.  The risk-adjusted QM score is adjusted for the specific risk for that QM in the nursing facility.  The risk-adjustment methodology is described in more detail in the Quality Measure Users' Manual available on the CMS website referenced in the last paragraph. It is important to note that the regression models used in the risk adjustment are not refit each time the QMs are updated.  It is assumed that the relationships do not change, so the coefficients from the most recent "fitting" of the model are used along with the most recent QM data. The covariates and the coefficients used in the risk-adjustment models are reported in Table A-2 in the Appendix.

Ratings for the QM domain are calculated using the three most recent quarters for which data are available.  This time period specification was selected to increase the number of assessments available for calculating the QM rating, increasing the stability of estimates and reducing the amount of missing data. The adjusted three-quarter QM values for each of the eleven QMs used in the five-star algorithm are computed as follows:

$$QM_{3Quarter} = [(QM_{Q1} * D_{Q1}) + (QM_{Q2} * D_{Q2}) + (QM_{Q3} * D_{Q3})]/(D_{Q1} + D_{Q2} + D_{Q3})$$

Where $QM_{Q1}$, $QM_{Q2}$, and $QM_{Q3}$ correspond to the adjusted QM values for the three most recent quarters and $D_{Q1}$, $D_{Q2}$, and $D_{Q3}$ are the denominators (number of eligible residents for the particular QM) for the same three quarters.

**Table 6**
**MDS-Based Quality Measures**

| Measure | Comments |
|---|---|
| **Long-Stay Measures:** | |
| **Percent of residents whose need for help with activities of daily living has increased[1]** | 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. This is a change measure that reflects worsening performance on at least 2 late loss ADLs by one functional level or on one late loss ADL by more than one functional level compared to the prior assessment. The late loss ADLs are bed mobility, transfer, eating, and toileting. Maintenance of ADLs is related to an environment in which the resident is up and out of bed and engaged in activities. The CMS Staffing Study found that higher staffing levels were associated with lower rates of increasing dependence in activities of daily living. |
| **Percent of high-risk residents with pressure ulcers** | This measure captures the percentage of long-stay, high-risk residents with Stage II-IV pressure ulcers**.** Residents at high risk for pressure ulcers are those who are impaired in bed mobility or transfer, who are comatose, or who suffer from malnutrition. |
| **Percent of residents who have/had a catheter inserted and left in their bladder** | This measure reports the percentage of residents who have had an indwelling catheter in the last 7 days. Indwelling catheter use may result in complications, like urinary tract or blood infections, physical injury, skin problems, bladder stones, or blood in the urine. |
| **Percent of residents who were physically restrained** | This measure reports the percent of long-stay nursing facility residents who are physically restrained on a daily basis. A resident who is restrained daily can become weak, lose his or her ability to go to the bathroom without help, and develop pressure ulcers or other medical complications. |
| **Percent of residents with a urinary tract infection** | This measure reports the percent of long-stay nursing facility residents who have had a urinary tract infection within the past 30 days. Urinary tract infections can often be prevented through hygiene and drinking enough fluid. Urinary tract infections are relatively minor but can lead to more serious problems and cause complications like delirium if not treated. |
| **Percent of residents who self-report moderate to severe pain** | 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 pain in the last 5 days. |
| **Percent of residents experiencing one or more falls with major injury** | 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 (one full calendar year). |
| **Percent of residents who received an antipsychotic medication** | This measure reports the percentage of long-stay residents who are receiving antipsychotic drugs in the target period. Reducing the rate of antipsychotic medication use has been the focus of several CMS initiatives. The Food and Drug Administration (FDA) has warned that antipsychotic medications can have significant side effects and are associated with an increased risk of death when used in elderly patients with dementia |
| **Short-Stay Measures** | |
| **Percent of residents with pressure ulcers that are new or worsened** | This measure captures the percentage of short-stay residents with new or worsening Stage II-IV pressure ulcers. |
| **Percent of residents who self-report moderate to severe pain** | 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. |
| **Percent of residents who newly received an antipsychotic medication** | 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. |

[1]Indicates ADL QM as referenced in scoring rules
Sources: Based on information from the AHRQ Measures Clearinghouse and the NHVBP Draft Design Report and the MDS 3.0 Quality Measures User's Manual.

## Scoring Rules

Consistent with the specifications used for *Nursing Home Compare,* long-stay measures are included in the score if the measure can be calculated for at least 30 residents assessments (summed across three quarters of data to enhance measurement stability). Short-stay measures are included in the score only if data are available for at least 20 residents' assessments.

For each measure, 20 to 100 points are assigned based on facility performance, with the points determined in the following way:

- For long-stay ADL worsening, long-stay pressure ulcers, long-stay catheter, long-stay urinary tract infections, long-stay pain, long-stay injurious falls, and short-stay pain: facilities are grouped into quintiles based on the distribution of the QM. The quintiles are assigned 20 points for the poorest performing quintile, 100 points for the best performing quintile, and 40, 60 or 80 points for the second, third and fourth quintiles respectively.
- The physical restraint and short-stay pressure ulcer QMs are treated slightly differently because they have low prevalence – specifically, substantially more than 20 percent (i.e. a quintile) of nursing homes have zero percent rates on these measures.
  - o For the restraint QM, facilities achieving the best possible score on the QM (i.e. zero percent of residents triggering the QM) are assigned 100 points; this is about 60 percent of facilities (or 3 quintiles). The remaining facilities are divided into two evenly sized groups, (each with about 20 percent of nursing homes); the poorer performing group is assigned 20 points, and the better performing group is assigned 60 points.
  - o The short-stay pressure ulcer QM is treated similarly: facilities achieving the best possible score on the QM (i.e. zero percent of residents triggering the QM) are assigned 100 points; this is about one-third of nursing homes. The remaining facilities are divided into three evenly sized groups (each with about 23 percent of nursing homes) and assigned 25, 50 or 75 points.;.
- The two quality measures that are newly included in the QM rating as of February 2015 – short-stay and long-stay antipsychotic medication use – are also treated somewhat differently than the QMs that were already part of the rating:
  - o For the long-stay antipsychotic medication QM, facilities are divided into five groups based on the national distribution of the measure: the top-performing 10 percent of facilities receive 100 points; the poorest performing 20 percent of facilities receive 20 points; and the middle 70 percent of facilities are divided into three equally sized groups (each including approximately 23.3 percent of nursing homes) and receive 40, 60 or 80 points.
  - o The short-stay antipsychotic medication QM is treated similarly; however, because approximately 20 percent of facilities achieve the best possible score on this QM (i.e. zero percent of residents triggering the QM), these facilities all receive 100 points; the poorest performing 20 percent of facilities receive 20 points; and the remaining facilities are divided into three equally sized groups (each including approximately 20 percent of nursing homes) and receive 40, 60 or 80 points.

All of the 11 QMs are given equal weight. The points are summed across all QMs to create a total score for each facility. The total possible score ranges between 220 and 1100 points.

Note that the quintiles are based on the national distribution for all of the QMs except for the ADL measure. For the ADL measure, quintiles are set on a State -specific basis using the State distribution.

The ADL measure is based on the within-State distribution because this measure appears to be particularly influenced by differences in state Medicaid policies governing long term care.

Cut points for the QMs were set based on the QM distributions averaged across the third and fourth quarters of 2013 and the first quarter of 2014. Note that the cut points are determined prior to any imputation for missing data (see discussion below). Also, the state-specific cut points for the ADL QMs are created for states/territories that have at least five facilities with a non-imputed value for that QM. In the rare case a State does not satisfy this criterion, the national distribution for that QM is used to set the cut points for that State. The cut points for the QMs are shown in the Appendix (Tables A3-A4).

**Missing Data and Imputation**

Some facilities have missing data for one or more QM, usually because of an insufficient number of residents available for calculating the QM. Missing values are imputed based on the statewide average for the measure. The imputation strategy for these missing values depends on the pattern of missing data.

- For facilities that have data for at least four of the eight long-stay QMs, missing values are imputed based on the statewide average for the measure. Points are then assigned according to the quintile-based cut points described above.

- For facilities that have data on two of three short-stay QMs, missing values are imputed based on the statewide average for the measure. Points are then assigned according to the percentile-based cut points described above.

- The QM rating for facilities with data on three or fewer long-stay QMs is based on the short-stay measures only. Mean values for the missing long-stay QMs are not imputed.

- Similarly, the QM rating for facilities with data on zero or one short-stay QM is based on the long-stay measures only. Mean values for the missing short-stay QMs are not imputed.

Based on these rules, after imputation, facilities that receive a QM rating are in one of the following categories:

- They have points for all of the QMs.
- They have points for only the eight long-stay QMs (long-stay facilities).
- They have points for only the three short-stay QMs (short-stay facilities)
- No values are imputed for nursing homes with data on fewer than four long-stay QMs and fewer than two short-stay QMs. No QM rating is generated for these nursing homes.

So that all facilities are scored on the same 1100 point scale, points are rescaled for long and short-stay facilities:

- If the facility has data for only the three short-stay measures (total of 300 possible points), its score is multiplied by 1100/300.

- If the facility has data for only the eight long-stay measures (total of 800 possible points), its score is multiplied by 1100/800.

**Rating Methodology**

Once the summary QM score is computed for each facility as described above, the five-star QM rating is assigned, according to the point thresholds shown in Table 7. These thresholds were set so that the overall proportion of nursing homes would be approximately 25 percent 5-star, 20 percent for each of 2, 3

and 4-stars and 15 percent 1-star in February 2015 when the antipsychotic QMs are first included in the QM rating and hence rebasing was required. The cut points associated with these star ratings will be held constant for a period of at one year, allowing the distribution of the QM rating to change over time.

**Table 7**
**Star Cut-points for MDS Quality Measure Summary Score (updated February 2015)**

| QM Rating | Point Range for MDS Quality Measure Summary Score (updated February 2015) |
|---|---|
| ★ | 225 – 544 |
| ★★ | 545 – 629 |
| ★★★ | 630 – 689 |
| ★★★★ | 690 – 759 |
| ★★★★★ | 760 – 1,100 |

## Overall Nursing Home Rating (Composite Measure)

Based on the five-star rating for the health inspection domain, the direct care staffing domain and the MDS quality measure domain, the overall five-star rating is assigned in five steps as follows:

*Step 1:* Start with the health inspection five-star rating.

*Step 2:* Add one star to the Step 1 result if staffing rating is four or five stars *and greater than* the health inspection rating; subtract one star if staffing is one star. The overall rating cannot be more than five stars or less than one star.

*Step 3:* Add one star to the Step 2 result if quality measure rating is five stars; subtract one star if quality measure rating is one star. The overall rating cannot be more than five stars or less than one star.

*Step 4:* If the health inspection rating is one star, then the overall quality rating cannot be upgraded by more than one star based on the staffing and quality measure ratings.

*Step 5:* If the nursing home is a Special Focus Facility (SFF) that has not graduated, the maximum overall quality rating is three stars.

The rationale for upgrading facilities in Step 2 that receive either a four- or five-star rating for staffing (rather than limiting the upgrade to those with five stars) is that the criteria for the staffing rating is quite stringent. However, requiring that the staffing rating be greater than the health inspection rating in order for the score to be upgraded ensures that a facility with four stars on health inspections and four stars on staffing (and more than one star on MDS) does not receive a five-star overall rating.

The rationale for limiting upgrades in Step 4 is that two self-reported data domains should not significantly outweigh the rating from actual onsite visits from trained surveyors who have found very serious quality of care problems. And since the health inspection rating is heavily weighted toward the most recent findings, a one-star health rating reflects both a serious and recent finding.

The rationale for limiting the overall rating of a Special Focus Facility (SFF) in Step 5 is that the three data domains are weighted toward the most recent results and do not fully take into account the history of some nursing homes that exhibit a long history of "yo-yo" or "in and out" compliance with federal safety and quality of care requirements. Such history is a characteristic of the SFF nursing homes. While we wish the three individually-reported data sources to reflect the most recent data so that consumers can be aware that such facilities may be improving, we are capping the overall rating out of caution that the prior "yo-yo" pattern could be repeated. Once the facility graduates from the SFF initiative by sustaining improved compliance for about 12 months, we remove our cap for the former SFF nursing home, both figuratively and literally.

The method for determining the overall nursing home rating does not assign specific weights to the health inspection, staffing, and QM domains. The health inspection rating is the most important dimension in determining the overall rating, but, depending on their performance on the staffing and QM domains, the overall rating for a facility may be up to two stars higher or lower than its health inspection rating.

If the facility has no health inspection rating, no overall rating is assigned. If the facility has no health inspection rating because it is too new to have two standard surveys, no ratings for any domain are displayed.

## Change in Nursing Home Rating

Facilities may see a change in their overall rating for a number of reasons. Because the overall rating is based on three individual domains, a change in any one of the domains can affect the overall rating.

A change in a domain can happen for several reasons.

### New Data for the Facility

First of all, new data for the facility may change the rating. When a facility has a health inspection survey, either a standard survey or as a result of a complaint, the deficiency data from the survey will become part of the calculation for the health inspection rating. The data will be included as soon as they become part of the CMS database. The timing for this may vary but depends on having a complete survey package for the state to upload to the database. Additional survey data may be added to the database because of complaint surveys or outcomes of revisits or Informal Dispute Resolutions (IDR) or Independent Informal Dispute Resolutions (IIDR). These data may not be added in the same cycle as the standard survey data.

Another reason the health inspection data (and therefore the rating) for a facility may change is the "aging" of one or more complaint deficiencies. Specifically, complaint surveys are assigned to a time period based on the calendar year in which the complaint survey occurred. Thus, when a complaint deficiency ages into a prior period, it receives less weight in the scoring process and thus the score may change.

CASPER staffing data are collected at the time of the health inspection survey, so new staffing data will be added for a facility approximately annually. The case-mix adjustment for the staffing data is based on MDS assessment data for the current residents of the nursing home on the last day of the quarter in which the staffing data were collected (i.e. the quarter closes to the standard survey date). If the RUG data for the quarter in which the staffing data were collected are not available for a given facility, the quarter of available RUG data closest to the survey target date - either before or after – is selected. If the RUG data

for the quarter in which the survey was conducted becomes available subsequently, the staffing rating will be recalculated to reflect these more appropriate data, and this might change the staffing rating. The staffing rating calculated using staffing data and RUG data from the same quarter will be held constant for a nursing home until new staffing data are collected for the facility.

Quality Measure data are updated on Nursing Home Compare on a quarterly basis, and the nursing home QM rating is updated at the same time. The updates occur mid-month in January, April, July, and October. Changes in the quality measures may change the star rating.

## Changes in Data for Other Facilities

Because the cut-points between star categories for the health inspection rating are based on percentile distributions that are not fixed, those cut-points may vary slightly depending on the current facility distribution in the database. However, while the cut-points for the health inspection ratings may change from month to month, the rating for a given facility is held constant until there is a change in the weighted health inspection score for that facility. Events that could change the health inspection score include:

- A new health inspection survey
- New complaint information
- A 2nd, 3rd or 4th revisit
- Resolution of an Informal Dispute Resolutions (IDR) or Independent Informal Dispute Resolutions (IIDR) resulting in changes to the scope and/or severity of deficiencies, or
- The "aging" of complaint deficiencies

Cut-points are fixed (starting April 2012) for the staffing measures (both RN and overall) as well as for the individual QMs and the QM rating (starting February 2015).

# Appendix

| Table A1<br>RUG Based Case-Mix Adjusted Nurse and Aide Staffing Minute Estimates | | | | | |
|---|---|---|---|---|---|
| **1995-1997 Time Study Average Times (Minutes)** | | | | | |
| **RUG-53** | **Resident Specific Time + Non-Resident Specific Time Minutes** | | | | |
| **Group** | **STAFF TYPE** | | | | **Total Minutes** |
| | **RN** | **LPN** | **Nurse Total** | **AIDE** | **All Staff Types** |
| **REHAB & EXTENSIVE** | | | | | |
| **RUX** | 160.67 | 84.89 | 245.56 | 200.67 | 446.22 |
| **RUL** | 127.90 | 59.19 | 187.10 | 134.57 | 321.67 |
| **RVX** | 137.28 | 58.33 | 195.61 | 167.54 | 363.15 |
| **RVL** | 128.93 | 47.75 | 176.67 | 124.30 | 300.97 |
| **RHX** | 130.42 | 48.69 | 179.12 | 155.39 | 334.50 |
| **RHL** | 117.25 | 69.00 | 186.25 | 127.00 | 313.25 |
| **RMX** | 163.88 | 91.36 | 255.24 | 195.76 | 450.99 |
| **RML** | 166.61 | 62.68 | 229.29 | 147.07 | 376.36 |
| **RLX** | 116.87 | 55.13 | 172.00 | 132.63 | 304.63 |
| **REHABILITATION** | | | | | |
| **REHAB ULTRA HIGH** | | | | | |
| **RUC** | 100.75 | 46.03 | 146.78 | 174.86 | 321.64 |
| **RUB** | 84.12 | 34.94 | 119.06 | 123.13 | 242.19 |
| **RUA** | 64.98 | 39.49 | 104.47 | 97.91 | 202.38 |
| **REHAB VERY HIGH** | | | | | |
| **RVC** | 93.31 | 50.21 | 143.52 | 163.59 | 307.10 |
| **RVB** | 85.90 | 42.54 | 128.44 | 138.37 | 266.81 |
| **RVA** | 72.04 | 26.53 | 98.56 | 103.49 | 202.05 |
| **REHAB HIGH** | | | | | |
| **RHC** | 94.85 | 45.04 | 139.89 | 166.48 | 306.37 |
| **RHB** | 100.85 | 34.80 | 135.65 | 130.40 | 266.05 |
| **RHA** | 89.76 | 27.51 | 117.27 | 102.59 | 219.85 |
| **REHAB MEDIUM** | | | | | |
| **RMC** | 78.01 | 49.35 | 127.37 | 172.16 | 299.53 |
| **RMB** | 88.69 | 38.05 | 126.73 | 140.23 | 266.96 |
| **RMA** | 94.15 | 34.41 | 128.55 | 116.54 | 245.10 |
| **REHAB LOW** | | | | | |
| **RLB** | 69.38 | 46.52 | 115.91 | 196.33 | 312.24 |
| **RLA** | 60.88 | 33.02 | 93.89 | 124.29 | 218.18 |

| Table A1 | | | | | |
|---|---|---|---|---|---|
| **RUG Based Case-Mix Adjusted Nurse and Aide Staffing Minute Estimates** | | | | | |
| **1995-1997 Time Study Average Times (Minutes)** | | | | | |
| **RUG-53** | **Resident Specific Time + Non-Resident Specific Time Minutes** | | | | |
| **Group** | **STAFF TYPE** | | | | **Total Minutes** |
| | **RN** | **LPN** | **Nurse Total** | **AIDE** | **All Staff Types** |
| **EXTENSIVE** | | | | | |
| **SE3** | 143.56 | 101.33 | 244.89 | 193.50 | 438.39 |
| **SE2** | 108.52 | 86.06 | 194.58 | 163.54 | 358.12 |
| **SE1** | 80.79 | 57.68 | 138.47 | 191.79 | 330.26 |
| **SPECIAL** | | | | | |
| **SSC** | 72.9 | 64.3 | 137.20 | 184.1 | 321.30 |
| **SSB** | 70.9 | 55.0 | 125.90 | 172.4 | 298.30 |
| **SSA** | 91.7 | 41.7 | 133.40 | 130.4 | 263.80 |
| **CLINICALLY COMPLEX** | | | | | |
| **CC2** | 85.2 | 42.50 | 127.70 | 191.1 | 318.80 |
| **CC1** | 55.7 | 57.70 | 113.40 | 176.9 | 290.30 |
| **CB2** | 61.5 | 41.80 | 103.30 | 159.0 | 262.30 |
| **CB1** | 59.0 | 36.20 | 95.20 | 147.3 | 242.50 |
| **CA2** | 58.8 | 43.30 | 102.10 | 130.3 | 232.40 |
| **CA1** | 59.7 | 37.60 | 97.30 | 103.3 | 200.60 |
| **IMPAIRED COGNITION** | | | | | |
| **IB2** | 40.0 | 32.0 | 72.00 | 137.2 | 209.20 |
| **IB1** | 39.0 | 32.0 | 71.00 | 130.0 | 201.00 |
| **IA2** | 38.0 | 27.0 | 65.00 | 100.0 | 165.00 |
| **IA1** | 33.0 | 26.0 | 59.00 | 96.0 | 155.00 |
| **BEHAVIOR** | | | | | |
| **BB2** | 40.0 | 30.0 | 70.00 | 136.0 | 206.00 |
| **BB1** | 38.0 | 28.0 | 66.00 | 130.0 | 196.00 |
| **BA2** | 38.0 | 30.0 | 68.00 | 90.0 | 158.00 |
| **BA1** | 34.0 | 25.0 | 59.00 | 73.5 | 132.50 |

| Table A1 RUG Based Case-Mix Adjusted Nurse and Aide Staffing Minute Estimates | | | | | |
|---|---|---|---|---|---|
| 1995-1997 Time Study Average Times (Minutes) | | | | | |
| RUG-53 | Resident Specific Time + Non-Resident Specific Time Minutes | | | | |
| Group | STAFF TYPE | | | | Total Minutes |
| | RN | LPN | Nurse Total | AIDE | All Staff Types |
| PHYSICAL FUNCTION | | | | | |
| PE2 | 37.0 | 32.0 | 69.00 | 184.8 | 253.80 |
| PE1 | 37.0 | 29.4 | 66.40 | 181.6 | 248.00 |
| PD2 | 36.0 | 25.0 | 61.00 | 170.0 | 231.00 |
| PD1 | 36.0 | 27.6 | 63.60 | 160.0 | 223.60 |
| PC2 | 25.6 | 32.8 | 58.40 | 154.4 | 212.80 |
| PC1 | 45.1 | 20.6 | 65.70 | 124.2 | 189.90 |
| PB2 | 28.0 | 36.8 | 64.80 | 80.6 | 145.40 |
| PB1 | 27.5 | 27.7 | 55.20 | 93.9 | 149.10 |
| PA2 | 31.9 | 30.6 | 62.50 | 72.9 | 135.40 |
| PA1 | 28.2 | 29.8 | 58.00 | 72.8 | 130.80 |

**Table A2**

**Coefficients for Risk-Adjustment Model**

| Quality Measure/Covariate | Constant (Intercept) | Coefficient |
|---|---|---|
| **Percent of long-stay residents who had a catheter inserted and left in their bladder** | -3.645993 | |
|    1. Indicator of frequent bowel incontinence on prior assessment | | 0.545108 |
|    2. Indicator of pressure sores at stages II, III, or IV on prior assessment | | 1.967017 |
| **Percent of long-stay residents who self-report moderate to severe pain** | -2.428281 | |
|    1. Indicator of independence or modified independence in daily decision making on the prior assessment | | 1.044019 |
| **Percent of short-stay residents with pressure ulcers that are new or worsened** | -5.204646 | |
|    1. Indicator of requiring limited or more assistance in bed mobility on the initial assessment | | 1.013114 |
|    2. Indicator of bowel incontinence at least occasionally on initial assessment | | 0.835473 |
|    3. Indicator of diabetes or peripheral vascular disease on the initial assessment | | 0.412676 |
|    4. Indicator of low body mass index on the initial  assessment | | 0.373643 |

Source: http://www.cms.hhs.gov/NursingHomeQualityInits/Downloads/NHQIQMUsersManual.pdf

# Table A3
# National Ranges for Point Values for Non-ADL QMs (updated February 2015)

| Quality Measure | # of QM Points is... | For QM values between... | and... |
|---|---|---|---|
| **Moderate to Severe Pain (long-stay)** | 100 | 0.00000000 | 0.02115460 |
| | 80 | 0.02115461 | 0.04816983 |
| | 60 | 0.04816984 | 0.07929856 |
| | 40 | 0.07929857 | 0.12534518 |
| | 20 | 0.12534519 | 1.00000000 |
| **High Risk Pressure Ulcers (long-stay)** | 100 | 0.00000000 | 0.02659575 |
| | 80 | 0.02659576 | 0.04489800 |
| | 60 | 0.04489801 | 0.06372548 |
| | 40 | 0.06372549 | 0.08949414 |
| | 20 | 0.08949415 | 1.00000000 |
| **Catheter (long-stay)** | 100 | 0.00000000 | 0.01041907 |
| | 80 | 0.01041908 | 0.02108049 |
| | 60 | 0.02108050 | 0.03237411 |
| | 40 | 0.03237412 | 0.04785475 |
| | 20 | 0.04785476 | 1.00000000 |
| **Urinary Tract Infection (long-stay)** | 100 | 0.00000000 | 0.02127661 |
| | 80 | 0.02127662 | 0.04050634 |
| | 60 | 0.04050635 | 0.06083648 |
| | 40 | 0.06083649 | 0.08982036 |
| | 20 | 0.08982037 | 1.00000000 |
| **Physical Restraints (long-stay)** | 100 | 0.00000000 | 0.00000000 |
| | 60 | 0.00000001 | 0.01851848 |
| | 20 | 0.01851849 | 1.00000000 |
| **Injurious Falls (long-stay)** | 100 | 0.00000000 | 0.01142857 |
| | 80 | 0.01142858 | 0.02259883 |
| | 60 | 0.02259884 | 0.03424656 |
| | 40 | 0.03424657 | 0.05000000 |
| | 20 | 0.05000001 | 1.00000000 |

| Quality Measure | # of QM Points is... | For QM values between... | and... |
|---|---|---|---|
| **Antipsychotic Medications (long-stay)** | 100 | 0.00000000 | 0.08088236 |
| | 80 | 0.08088237 | 0.14285715 |
| | 60 | 0.14285716 | 0.19642856 |
| | 40 | 0.19642857 | 0.26775956 |
| | 20 | 0.26775957 | 1.00000000 |
| **Moderate to Severe Pain (short-stay)** | 100 | 0.00000000 | 0.08333332 |
| | 80 | 0.08333333 | 0.14634145 |
| | 60 | 0.14634146 | 0.20720723 |
| | 40 | 0.20720724 | 0.28215770 |
| | 20 | 0.28215771 | 1.00000000 |
| **New or Worsening Pressure Ulcers (short-stay)** | 100 | 0.00000000 | 0.00000000 |
| | 75 | 0.00000001 | 0.00674135 |
| | 50 | 0.00674136 | 0.01477029 |
| | 25 | 0.01477030 | 1.00000000 |
| **Antipsychotic Medications (short-stay)** | 100 | 0.00000000 | 0.00000000 |
| | 80 | 0.00000001 | 0.01351350 |
| | 60 | 0.01351351 | 0.02336446 |
| | 40 | 0.02336447 | 0.03821657 |
| | 20 | 0.03821658 | 1.00000000 |

## Table A4. State-Specific Ranges for Point Values for ADL Decline (long-stay)
### (Updated February 2015)

| State | 100 points | | 80 points | | 60 points | | 40 points | | 20 points | |
|---|---|---|---|---|---|---|---|---|---|---|
| | From… | To… | From… | To… | From… | To… | From… | To… | From… | To… |
| Alabama | 0.0 | 0.07462682 | 0.07462683 | 0.10373443 | 0.10373444 | 0.13698632 | 0.13698633 | 0.18442622 | 0.18442623 | 1.0 |
| Alaska | 0.0 | 0.08333334 | 0.08333335 | 0.10937501 | 0.10937502 | 0.14044942 | 0.14044943 | 0.15483872 | 0.15483873 | 1.0 |
| Arizona | 0.0 | 0.08974361 | 0.08974362 | 0.13223142 | 0.13223143 | 0.15966387 | 0.15966388 | 0.21500000 | 0.21500001 | 1.0 |
| Arkansas | 0.0 | 0.08928570 | 0.08928571 | 0.12448132 | 0.12448133 | 0.16129031 | 0.16129032 | 0.22169810 | 0.22169811 | 1.0 |
| California | 0.0 | 0.05944055 | 0.05944056 | 0.09090910 | 0.09090911 | 0.12048195 | 0.12048196 | 0.16883118 | 0.16883119 | 1.0 |
| Colorado | 0.0 | 0.09999997 | 0.09999998 | 0.13294797 | 0.13294798 | 0.16363636 | 0.16363637 | 0.21951217 | 0.21951218 | 1.0 |
| Connecticut | 0.0 | 0.12385324 | 0.12385325 | 0.15178573 | 0.15178574 | 0.18243242 | 0.18243243 | 0.21999999 | 0.22000000 | 1.0 |
| Delaware | 0.0 | 0.10714288 | 0.10714289 | 0.16666665 | 0.16666666 | 0.17977529 | 0.17977530 | 0.20100502 | 0.20100503 | 1.0 |
| D.C | 0.0 | 0.05208335 | 0.05208336 | 0.08441560 | 0.08441561 | 0.11786370 | 0.11786371 | 0.24242427 | 0.24242428 | 1.0 |
| Florida | 0.0 | 0.08235296 | 0.08235297 | 0.11475409 | 0.11475410 | 0.14242425 | 0.14242426 | 0.17999998 | 0.17999999 | 1.0 |
| Georgia | 0.0 | 0.10596025 | 0.10596026 | 0.14184396 | 0.14184397 | 0.17570095 | 0.17570096 | 0.22748814 | 0.22748815 | 1.0 |
| Hawaii | 0.0 | 0.06578951 | 0.06578952 | 0.09782609 | 0.09782610 | 0.11428571 | 0.11428572 | 0.15999999 | 0.16000000 | 1.0 |
| Idaho | 0.0 | 0.09230769 | 0.09230770 | 0.13461539 | 0.13461540 | 0.17687075 | 0.17687076 | 0.20987654 | 0.20987655 | 1.0 |
| Illinois | 0.0 | 0.09356723 | 0.09356724 | 0.13389123 | 0.13389124 | 0.16778522 | 0.16778523 | 0.21428570 | 0.21428571 | 1.0 |
| Indiana | 0.0 | 0.11688313 | 0.11688314 | 0.15517238 | 0.15517239 | 0.19607843 | 0.19607844 | 0.23437500 | 0.23437501 | 1.0 |
| Iowa | 0.0 | 0.10273973 | 0.10273974 | 0.13541666 | 0.13541667 | 0.16822430 | 0.16822431 | 0.20338983 | 0.20338984 | 1.0 |
| Kansas | 0.0 | 0.10000000 | 0.10000001 | 0.14503816 | 0.14503817 | 0.18055555 | 0.18055556 | 0.21969698 | 0.21969699 | 1.0 |
| Kentucky | 0.0 | 0.10563381 | 0.10563382 | 0.14999999 | 0.15000000 | 0.18226601 | 0.18226602 | 0.22950822 | 0.22950823 | 1.0 |
| Louisiana | 0.0 | 0.12138727 | 0.12138728 | 0.17229730 | 0.17229731 | 0.20338986 | 0.20338987 | 0.24796749 | 0.24796750 | 1.0 |
| Maine | 0.0 | 0.08571429 | 0.08571430 | 0.10526315 | 0.10526316 | 0.13846152 | 0.13846153 | 0.19000000 | 0.19000001 | 1.0 |
| Maryland | 0.0 | 0.11945392 | 0.11945393 | 0.15593223 | 0.15593224 | 0.19740256 | 0.19740257 | 0.24444442 | 0.24444443 | 1.0 |
| Massachusetts | 0.0 | 0.09677420 | 0.09677421 | 0.12406018 | 0.12406019 | 0.14814816 | 0.14814817 | 0.18390804 | 0.18390805 | 1.0 |
| Michigan | 0.0 | 0.09633031 | 0.09633032 | 0.12574849 | 0.12574850 | 0.15584418 | 0.15584419 | 0.18939395 | 0.18939396 | 1.0 |
| Minnesota | 0.0 | 0.10791365 | 0.10791366 | 0.13114757 | 0.13114758 | 0.15211268 | 0.15211269 | 0.18032789 | 0.18032790 | 1.0 |
| Mississippi | 0.0 | 0.12389385 | 0.12389386 | 0.16062180 | 0.16062181 | 0.19354838 | 0.19354839 | 0.23118280 | 0.23118281 | 1.0 |
| Missouri | 0.0 | 0.08163262 | 0.08163263 | 0.11666666 | 0.11666667 | 0.15573770 | 0.15573771 | 0.20370372 | 0.20370373 | 1.0 |
| Montana | 0.0 | 0.08641977 | 0.08641978 | 0.12903227 | 0.12903228 | 0.16842106 | 0.16842107 | 0.21276599 | 0.21276600 | 1.0 |
| Nebraska | 0.0 | 0.10909090 | 0.10909091 | 0.13265308 | 0.13265309 | 0.17142858 | 0.17142859 | 0.20707070 | 0.20707071 | 1.0 |
| Nevada | 0.0 | 0.10810810 | 0.10810811 | 0.14473685 | 0.14473686 | 0.17241379 | 0.17241380 | 0.26056338 | 0.26056339 | 1.0 |
| New Hampshire | 0.0 | 0.13803682 | 0.13803683 | 0.17094018 | 0.17094019 | 0.19384617 | 0.19384618 | 0.22807020 | 0.22807021 | 1.0 |
| New Jersey | 0.0 | 0.08333334 | 0.08333335 | 0.12195121 | 0.12195122 | 0.15510206 | 0.15510207 | 0.20967742 | 0.20967743 | 1.0 |
| New Mexico | 0.0 | 0.12751677 | 0.12751678 | 0.15724814 | 0.15724815 | 0.19298243 | 0.19298244 | 0.23469386 | 0.23469387 | 1.0 |
| New York | 0.0 | 0.09011627 | 0.09011628 | 0.12231760 | 0.12231761 | 0.15286627 | 0.15286628 | 0.19306931 | 0.19306932 | 1.0 |

| State | Ranges for each point Category on the ADL QM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 100 points | | 80 points | | 60 points | | 40 points | | 20 points | |
| | From… | To… | From… | To… | From… | To… | From… | To… | From… | To… |
| North Carolina | 0.0 | 0.13469385 | 0.13469386 | 0.17467247 | 0.17467248 | 0.20720722 | 0.20720723 | 0.25000000 | 0.25000001 | 1.0 |
| North Dakota | 0.0 | 0.11111112 | 0.11111113 | 0.14173229 | 0.14173230 | 0.17431192 | 0.17431193 | 0.21523179 | 0.21523180 | 1.0 |
| Ohio | 0.0 | 0.09359606 | 0.09359607 | 0.12738856 | 0.12738857 | 0.16000000 | 0.16000001 | 0.19834712 | 0.19834713 | 1.0 |
| Oklahoma | 0.0 | 0.07480314 | 0.07480315 | 0.11450381 | 0.11450382 | 0.15454543 | 0.15454544 | 0.20930237 | 0.20930238 | 1.0 |
| Oregon | 0.0 | 0.06818184 | 0.06818185 | 0.11392406 | 0.11392407 | 0.14018692 | 0.14018693 | 0.17857142 | 0.17857143 | 1.0 |
| Pennsylvania | 0.0 | 0.11111109 | 0.11111110 | 0.13769754 | 0.13769755 | 0.16382253 | 0.16382254 | 0.20557492 | 0.20557493 | 1.0 |
| Rhode Island | 0.0 | 0.08936169 | 0.08936170 | 0.13157895 | 0.13157896 | 0.15831135 | 0.15831136 | 0.20061728 | 0.20061729 | 1.0 |
| South Carolina | 0.0 | 0.09251102 | 0.09251103 | 0.12757204 | 0.12757205 | 0.16000001 | 0.16000002 | 0.19555555 | 0.19555556 | 1.0 |
| South Dakota | 0.0 | 0.13227513 | 0.13227514 | 0.15702480 | 0.15702481 | 0.17605633 | 0.17605634 | 0.21428571 | 0.21428572 | 1.0 |
| Tennessee | 0.0 | 0.10126583 | 0.10126584 | 0.14379086 | 0.14379087 | 0.17391304 | 0.17391305 | 0.21212123 | 0.21212124 | 1.0 |
| Texas | 0.0 | 0.13664599 | 0.13664600 | 0.17560976 | 0.17560977 | 0.21416232 | 0.21416233 | 0.26086957 | 0.26086958 | 1.0 |
| Utah | 0.0 | 0.07258066 | 0.07258067 | 0.11403511 | 0.11403512 | 0.14179106 | 0.14179107 | 0.17857143 | 0.17857144 | 1.0 |
| Vermont | 0.0 | 0.12280704 | 0.12280705 | 0.17328519 | 0.17328520 | 0.20430108 | 0.20430109 | 0.24475523 | 0.24475524 | 1.0 |
| Virginia | 0.0 | 0.12380953 | 0.12380954 | 0.15942025 | 0.15942026 | 0.19338424 | 0.19338425 | 0.23275865 | 0.23275866 | 1.0 |
| Washington | 0.0 | 0.08571427 | 0.08571428 | 0.11442788 | 0.11442789 | 0.14432991 | 0.14432992 | 0.18357488 | 0.18357489 | 1.0 |
| West Virginia | 0.0 | 0.13513512 | 0.13513513 | 0.17452828 | 0.17452829 | 0.20481926 | 0.20481927 | 0.24691357 | 0.24691358 | 1.0 |
| Wisconsin | 0.0 | 0.09963100 | 0.09963101 | 0.12987011 | 0.12987012 | 0.15517240 | 0.15517241 | 0.19262294 | 0.19262295 | 1.0 |
| Wyoming | 0.0 | 0.09399480 | 0.09399481 | 0.13281251 | 0.13281252 | 0.16587676 | 0.16587677 | 0.20779220 | 0.20779221 | 1.0 |

Due to the small number of facilities; the cut-points for Guam, Puerto Rico, and the Virgin Islands are based on the national distribution of the ADL quality measure score.