Five-Star Quality Rating System

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Objectives

- Review Five-Star Quality Rating System
- Review Technical User's Guide
- Understand metrics used for each domain

Overview

- December 2008 CMS enhanced Nursing Home Compare
- Overall rating system 1-5 stars on facility performance for three types of measures (each has it own five-star rating)
- Domains
  - Health Inspection
  - Staffing
  - Quality Measures

Health Inspections

- Measure Based Upon outcomes for State health Inspections
- Based upon number, scope, and severity of deficiencies in the 2 most recent annual inspections occurring prior to November 28th, 2017
- All deficiencies are weighted by scope and severity
- Measure takes into account number of revisits required

Health Inspections

- Beginning February 2018 CMS calculates a health inspection score based upon points assigned to deficiencies in last 2 annual and complaint surveys
- Life Safety deficiencies are not included in calculations
- Federal Comparative Surveys are not reported or included in calculations
- **Results made during Federal Oversight Survey *are included***

Health Inspection Results

- Points assigned to individual health deficiencies with additional points assigned for substandard quality of care
- If deficiency is “past non-compliance” and the severity is “immediate jeopardy” then points associated with a G-level deficiency are assigned
- Repeat visits
  - No points for first visit
  - Points assigned for 2nd, 3rd, and 4th revisits

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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

Health Inspections

- Repeat Revisits
  - Revisit points are assigned upon 85% of health inspection score for the survey cycle if provider fails to correct deficiencies after 1st revisit
  - In technical user guide *"CMS's experience is that providers who fail to demonstrate restored compliance with safety and quality requirements during the first revisit have lower quality care than other nursing homes. Most revisits are associated with more serious quality problems."*

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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 health inspection and complaint inspections during a given survey cycle.

Health Inspection Score

- CMS calculates a total inspection score
- Total score is calculated as a weighted deficiency score (including revisit points)
- Lower survey score= lower number of deficiencies and revisits
- Most recent standard survey weighted more heavily with a weighting factor of 60% and previous period of 40%
- Facilities with only one standard inspection prior to November 28th, 2017 will receive “Too New to Report”. No overall quality rating is assigned and no rating are reported for staffing or QM domains, even if available

Health Inspection Score

- Complaint Inspections are assigned to a time period
  - November 28th, 2016 through November 27th, 2017 receive weighting factor of 60%
  - November 28th 2015 through November 27th, 2016
  - To avoid double counting, deficiencies that appear on complaints within 15 days of standard surveys are only counted once. Highest scope or severity will be used

Health Inspection Methodology

- CMS bases Five-Star quality rating in Health Inspection domain on relative performance of facility ***within a state***.
  - The top 10% (with lowest health inspection weighted scores) in each state receive 5 stars
  - The middle 70% receive a rating of 2, 3, or 4 stars, with an equal number (approximately 23.33%) in each rating category
  - The bottom 20% receive a 1 star rating

Health Inspection Methodology

"Rating methodology are re-calibrated each month so that distribution of star ratings within states remains relatively constant. However, the rating for a given facility is held constant until there is a change in the weighted health inspection core for that facility, regardless of changes in statewide distribution."

Health Inspections

- *"Facilities with two or more health inspections on or after November 28, 2017 Results (dates, counts and lists of citations) from the three most recent health inspections are displayed on Nursing Home Compare, regardless of whether these surveys took place before or after November 28, 2017. For example:*
  - *For facilities with one survey conducted on or after November 28, 2017, the posted results from the three most recent health inspections would include: One survey conducted after November 28, 2017; and two surveys conducted prior to November 28, 2018"*

Health Inspections

"For nursing homes that have had two surveys on or after November 28, 2017, the rating will still be based on the last two surveys conducted prior to November 28, 2017. However, since the results from the three most recent surveys are posted, the results from the oldest survey will not be displayed on the main website. For example:

- *For facilities with two surveys conducted on or after November 28, 2017, the posted results from the three most recent health inspections would include: Two surveys conducted after November 28, 2017; and one survey conducted prior to November 28, 2018."*

Health Inspections

"In other words, the oldest survey will still be used to calculate a facility's rating, but the results from that survey will not be displayed on the main website. Interested users can find these earlier survey results in the health inspection files that are available at:"

https://data.medicare.gov/data/nursing-home-compare.

Health Inspection Methodology

- Items that could change Health Inspection Score:
  - Survey occurred prior to November 28th, 2017 that has not yet entered that national database, then it will result in a change to a provider's health inspection score in the month following its entry
  - A 2nd, 3rd, or 4th revisit occurs that is associated with a survey occurring prior to November 28th, 2017
  - IDR or IIDR (Independent Informal Dispute Resolutions) resulting in changes to scope/severity of deficiencies in a survey that occurred prior to November 28th, 2017

Health Inspection Methodology

- Five Star Quality Rating System State-Level Cut Point Table available in the “downloads” section at:

https://www.cms.gov//medicare/provider-enrollment-and-certification/certificationandcompliance/fsqrs.html

Staffing Domain

- Facility ratings based upon two measures
  - Registered Nurse (RN) hours per resident day
  - Total staffing (RN, LPN, and Nurse aide hours) hours per resident per day
- Other nursing home staff (clerical or housekeeping staff) are not included
- Staffing measures are from data submitted quarterly through PBJ (Payroll-Based Journal system) along with daily resident census from MDS assessments
- Case-mix adjusted based upon RUG-IV groups (Resource Utilization Groups) from MDS 3.0 assessments

Staffing Domain

- Source for staffing domain is reported Staffing Hours for PBJ
  - Data should be submitted **and accepted** quarterly
  - Due 45 days after the end of each reporting period
  - Resident census is based upon daily resident census measure that is calculated by CMS using MDS assessments

Staffing Domain

- Specific PBJ codes that are used in RN, LPN, and Nurse Aide calculations:
  - RN hours: Includes RN Director of Nursing (job code 5), RN with admin duties (code 6), and RNs (code 7)
  - LPN hours: Includes LPN with admin duties (job code 8), and LPNs (code 9)
  - Nurse Aide hours: Includes CNAs (job code 10), aides in training (code 11), and medication aides/technicians (code 12)

Staffing Domain

- Does include:
  - Full time and part time employees
  - Agency contract or individual contract employees

- Does NOT include:
  - Private duty nursing staff reimbursed by resident or family
  - Hospice staff
  - Feeding assistants

Staffing Domain

- Daily census used as the denominator of staffing ratios (from MDS assessments) calculated by:
  - Identify the reporting period (quarter) for which census will be calculated (e.g., CY 2017 Q4: Oct 1-December 31, 2017)
  - Extract MDS assessments data on all residents living in facility one year prior to reporting period

Staffing Domain: Denominator

- Identify discharged residents using criteria
  - Has a discharge assessment, use date of discharge
  - If there is a subsequent admission assessment, assume resident has re-entered nursing home
- Any resident with an interval of 150 days without an assessment; assume resident is no longer in facility
- If none of these apply; then residents are assumed to reside in facility

Staffing Domain

- MDS assessments for a resident is linked using a Resident Internal ID
  - Assigned by Quality Improvement Evaluation System (QIES) Assessment Submission and Processing (ASAP) system
  - MDS items are used to define the Resident Internal ID
    - State ID
    - Facility Internal ID (QIES ASAP system number)
    - Social Security Number
    - First and Last Name
    - Date of Birth
    - Gender

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Therefore, in order to achieve an accurate census, it is imperative that, in addition to having complete assessment data for each resident including discharge assessment data, residents are assigned correct Resident Internal IDs. To facilitate this, providers must ensure that MDS items, in particular the items indicated above, are entered correctly on each assessment. Providers must also carefully monitor the Final Validation Report, generated upon MDS submission, for any errors. Providers should work with their State RAI Coordinator or State Automation Coordinator to correct any errors that arise during assessment submission. In addition to using their Final Validation Report to validate the file structure and data content of each successful MDS submission, providers can monitor their MDS data using additional Certification and Survey Provider Enhanced Reports (CASPER) Reports. There are CASPER Reports for Admissions, Discharges, Duplicate Residents, Errors, and daily Rosters, among others. Full descriptions of these reports are available in Section 6 of the *CASPER Reporting MDS Provider User's Guide* available at the following link: https://qtso.cms.gov/download/guides/casper/cspr_sec6_mds_prvdr.pdf. Information about Final Validation Reports and error messages in the reports is available in Sections 4 and 5 of the *MDS 3.0 Provider User's Guide* available at the following link: https://qtso.cms.gov/mdstrain.html.

Staffing Domain

- Exclusion Criteria to identify improbable PBJ staffing data
  - Nursing Home has 5 or more days with at least one resident but no nurse
  - Total nurse staffing aggregated over all days in quarter with both nurses and resident is excessively low
  - Total nurse staffing aggregated over all days in quarter with both nurses and residents is excessively high
  - Nurse aide staffing aggregated over all days in the quarter with both nurses and residents is excessively high

Staffing Domain

- Case-Mix Adjusted
  - CMS adjusts the reported staffing ratios for case-mix using RUG-IV case-mix system
  - CMS calculates case-mix adjusted hours per resident per day for each facility for each staff type using this formula:

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

Staffing Domain

- Reported hours are from PBJ
- National Average hours represent the national mean of expected hours across all facilities active in last day of quarter and submitted valid data
- Expected Values are based upon daily distribution of residents by RUG-IV group across same quarter covered by PBJ reported staffing and estimates of daily RN, LPN, and nurse aide hours from CMS STRIVE study

Table 3
National Average Hours per Resident Day Used To Calculate Adjusted Staffing (as of July 2018)[1]

Type of staff	National average expected hours per resident per day
Total nursing staff (Aides + LPNs + RNs)	3.2146
Registered nurses	0.3763

[1]These values will be updated each quarter and will be available in the State Averages table at (https://data.medicare.gov/data/nursing-home-compare)

Staffing Domain

- Scoring Rules:
  - Two staffing measures RN and total nursing staff are given equal weight
  - Each are given a star rating of 1-5 based upon percentile method
  - Percentile cut points were determined using data available as of March 2018

Table 4

National Star Cut Points for Staffing Measures, Based on Case-Mix Adjusted Hours per Resident Day (updated April 2018)

Staff type	1 star	2 stars	3 stars	4 stars	5 stars
RN	< 0.246	0.246 - 0.382	0.383 – 0.586	0.587 – 0.883	≥0.884
Total	< 3.176	3.176 – 3.551	3.552 - 4.009	4.010 – 4.237	≥4.238

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

Staffing Domain

- Rating Methodology
  - Overall Rating is based upon both RN and total nursing staffing ratings
  - To achieve 5 stars facilities must have 5 stars in both RN and total nursing staff
  - To achieve 4 stars facilities must receive at least a 3 star rating in one (either RN or total nursing staff) and a rating on 4 or 5 stars on the other

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Table 5

Staffing Hours and Rating (updated April 2018)

RN rating and hours		Total nurse staffing rating and hours (RN, LPN and nurse aide)				
		1	2	3	4	5
		< 3.176	3.176 – 3.551	3.552 – 4.009	4.010 – 4.237	≥4.238
1	< 0.246	★	★	★★	★★	★★★
2	0.246 - 0.382	★	★★	★★★	★★★	★★★
3	0.383 – 0.586	★★	★★★	★★★	★★★★	★★★★
4	0.587 – 0.883	★★	★★★	★★★★	★★★★	★★★★
5	≥0.884	★★★	★★★	★★★★	★★★★	★★★★★

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

Staffing Domain

- Scoring Exceptions July 2018
  - Providers that fail to submit any staffing data by required deadline will receive an overall 1 star rating for overall and RN staffing for the quarter
  - Providers that submit staffing data indicating that there were 7 days or more without RN staffing will receive a 1 star rating for overall staffing and RN staffing
  - CMS conducts audit of nursing homes to verify data. If facility fails to respond to these audits or audits find discrepancies then facility will receive a 1 star rating for overall and RN staffing

Quality Measures

- Facility Rating for the QM domain is based upon performance for 13 (out of 24) of the MDS-based QMs and 3 MDS and Medicare claims based measures
- Measures were based upon validity and reliability
- Long-Stay Measures
- Short-Stay Measures (MDS Assessments)
- Short-Stay Measures (Claims data and MDS)

Long Stay Quality Measures

- Percentage of residents whose need for ADLs increased
- Percentage of residents whose ability to move independently worsened
- Percentage of high risk residents with pressure ulcers
- Percentage of residents with catheters
- Percentage of residents with physical restraints
- Percentage of residents with UTIs
- Percentage of residents who self-report moderate to severe pain
- Percentage of residents with falls with major injury
- Percentage of residents who receive antipsychotic medication

Short Stay Measures

- Percentage of residents whose physical function improves from admission to discharge
- Percentage of residents with pressure ulcers that are new or worsened
- Percentage of residents who self-report moderate to severe pain
- Percentage of residents who newly received an antipsychotic medication

Short Stay Measure: MDS & Claims

- Percentage of residents who were re-hospitalized after a nursing home admission
- Percentage of residents who have had an outpatient emergency department visit
- Percentage of residents who were successfully discharged to the community

Quality Measure Domain

- CMS calculates ratings for the QM domain using the 4 most recent quarters

$$QM_{4Quarter} = [(QM_{Q1} * D_{Q1}) + (QM_{Q2} * D_{Q2}) + (QM_{Q3} * D_{Q3}) + (QM_{Q4} * D_{Q4})]/(D_{Q1} + D_{Q2} + D_{Q3} + D_{Q4})$$

Where QM_{Q1}, QM_{Q2}, QM_{Q3}, and QM_{Q4} correspond to the adjusted QM values for the four most recent quarters and D_{Q1}, D_{Q2}, and D_{Q3} D_{Q4} are the denominators (number of eligible residents for the particular QM) for the same four quarters.

Values for the three claims-based measures are calculated in a similar manner, except that the data used to calculate the measures use a full year of data rather than being broken out separately by quarter.

Quality Measure Domain

- Missing Data and Imputation
  - MDS based measures are reported if measure can be calculated for at least 20 resident assessments summed across four quarters of data for both long stay and short stay QMs.
  - Claims-based measures are reported if the measure can be calculated for at least 20 nursing home stays over the course of the year

Quality Measure Domain

- Missing Data and Imputation
  - For facilities with Missing data or inadequate denominator or size for one or more QMs
    - All available data is used
    - Remaining assessments are imputed to get facility to minimum required sample size of 20 using the state average of measure
    - Imputed data for QMs is for the assigning of QM score but will not be reported on Nursing Home Compare
    - QM values are publicly reported only for providers meeting the minimum denominator requirements

Quality Measure Domain

- Scoring Rules for Individual QMs
  - Each measure receives 20 to 100 points based upon facility performance relative to national distribution of the QM
  - Points are assigned after any needed imputation of individual QM values

Quality Measure Domain

- Long stay Quality Measures
  - ADL worsening, Pressure Ulcers, Catheters, UTIs, Pain, Falls with Major Injury, and Short Stay Pain
    - Facilities are grouped into quintiles based on national distribution of the QM. Quintiles are assigned 20 points for the poorest performing, 100 points for the best performing, and 40,60, or 80 for the 2nd, 3rd, and 4th quintiles respectively

Quality Measure Domain

- Long stay Physical Restraints and Short Stay pressure ulcer QMs are treated differently due to low prevalence:
  - Long stay Physical Restraints facilities achieving zero percent are assigned 100 points (about 60% of facilities). The remaining are divided up into 2 evenly sized group poorer performing group receives 20 points and better performing receives 60 points
  - Short Stay Pressure Ulcer
    - Zero performing group receive 100 points
    - Remaining divided into 3 groups evenly and assigned 25, 50, or 75 points

Quality Measure Domain

- Scoring Rules added February 2015
  - Long stay Antipsychotics, mobility decline, short stay functional improvement, and 3 claim-based measures
    - Top performing 10% receive 100 points
    - Poorest performing 20% receive 20 points
    - Middle 70% divided equally into 3 groups receiving 40, 60, or 80 points
  - Short Stay Antipsychotic Measure
    - 20% of facilities achieve zero percent receive 100 points
    - Poorest performing 20% of facilities receive 20 points
    - Remaining facilities divided into 3 equal groups receive 40, 60, 80 points

Quality Measure Domain

- Rating Methodology
- Total possible score 325-1,600
- Facilities who receive a QM rating are in one of the categories
  - Points for all QMs
  - Points for only 9 Long-stay QMs
  - Points for 9 Long-stay and 4 MDS-based short stay QMs
  - Points for only 7 short-stay QMs
  - No values are imputed for nursing homes with data on fewer than 5 long-stay QMs and fewer than 4 short-stay QMs No QM rating is generated for the nursing homes

Quality Measure Domain

Table 7
Star Cut-points for Quality Measure Summary Score

QM Rating	Point Range
★	325 – 789
★★	790 – 889
★★★	890 – 969
★★★★	970 – 1054
★★★★★	1055 – 1600

Overall Composite Measure

- Based upon star ratings for Health Inspection, Staffing, and Quality Measure domains, CMS assigns overall Five-Star Rating in 3 steps:
  - Step 1: Start with Health Inspection Rating
  - Step 2: Add one star to Step 1 result if the staffing ration is four or five starts ***and greater than the health inspection rating***; subtract a star if staffing rating is a one star
  - Step 3: Add one star to the Step 2 result if the QM rating is five stars; subtract one star if QM rating is a one star

Overall Composite Score

- Overall score cannot be more than 5 stars or less than 1 star
- If Health Inspection Rating is one star then overall rating cannot be upgraded by more than one star based upon staffing and quality measure ratings.
- Special Focus Facilities that has not graduated the maximum overall rating is 3 stars
- Rationale for limiting star rating upgrades: two are self-reported domains should not outweigh from actual onsite visits
- Health Inspection rating is the most important dimension in determining overall rating

Let's Practice

- Sunnyside Nursing Home has a Health Inspection rating of 2 Stars, a Staffing Rating of 4 Stars, and Quality Measure Rating of 3 Stars.

What is their Overall Composite Rating?

Sunnyside Nursing Home

- Step 1: 2 Stars
- Step 2: Add one star (Staffing 4 stars)
- Step 3: No star added due to QM 3 star
- *Answer: 3 Star Overall Nursing Home Rating*

Change in Nursing Home Rating

- Potential Reasons for changes in domains
  - New data for a facility could potentially change rating
  - Changes to Health Inspections that occurred prior to November 28th 2017
  - Resolution of IDR or IIDR
  - PBJ staffing data reported quarterly
  - Quality Measure data reported quarterly (January, April, July, and October toward the end of the month)
  - Claims-based QM data update every 6 months

Revisions to Five-Star Technical Guide

- February 2018
  - CMS for a period of 12 months will not use deficiencies cited on surveys conducted on or after November 28th, 2017
  - Surveys (standard and complaint) after November 28th, 2017 will be on Nursing Home compare, but will not be utilized in Health Inspection calculation
- April 2018
  - CMS is replacing the staffing measures from CMS-671 with PBJ information
- May 2018
  - Additional text added to staffing section about resident census calculation
- July 2018
  - Additional reasons added to staffing domain why a nursing home may receive one-star rating for staffing and RN staffing

Resources

- Design for Nursing Home Five-Star Quality Rating System: Technical User's Guide; July 2018
- MDS 3.0 Quality Measure User's Manual
- CASPER Reports in QIES system
  - Five-Star Preview Report
- CASPER Reporting User's Guide for MDS Providers
  - https://qtso.cms.gov/providers/nursing-home-mdsswing-bed-providers
- PBJ Provider User Guide

Provider Preview Reports

- CMS provides Five-Star Preview Reports to facilities to utilize
- Preview Reports are sent to facility inbox in QIES CASPER system
- Can review report and make corrections before going live on Nursing Home Compare
- Five-Star Helpline
  - (800-839-9290)
  - BetterCare@cms.hhs.gov if the Help Line is not available

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Thank You!