Dialysis Facility Compare
Star Ratings System

July 10, 2014

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Agenda

• Introduction and Roles
• Background on Star Rating Systems
• Star Rating on DFC
• Star Rating Methodology
• Rating Results
• Maintenance and Updates of Star Ratings
• Q&A Session
Introduction and Roles

• Centers for Medicare & Medicaid Services (CMS)
  – Instituted Dialysis Facility Compare (DFC) site for public reporting of Quality Measures for ESRD in 2001
  – Instituting Star Rating System on DFC in October 2014 Release
  – DFC Star Ratings available for preview July 15-August 15

• University of Michigan Kidney Epidemiology and Cost Center (UM-KECC)
  – ESRD Quality Measures Development and Maintenance Contractor for CMS
Background on the Star Rating Systems
Background on Star Ratings

• 2014-2015: Star ratings will be introduced on Dialysis Facility Compare, Home Health Compare, and Hospital Compare

• 2014: Star ratings introduced early in the year on Physician Compare for certain physician groups

• 2008: Star ratings introduced on Nursing Home Compare
The CMS Vision

• TO OPTIMIZE HEALTH OUTCOMES BY IMPROVING CLINICAL QUALITY AND TRANSFORMING THE HEALTH SYSTEM.
The Three AIMs

Better Health for the Population

Better Care for Individuals

Lower Cost Through Improvement
The Six Goals of the CMS Quality Strategy

1. Make care safer by reducing harm caused in the delivery of care
2. Strengthen person and family engagement as partners in their care
3. Promote effective communication and coordination of care
4. Promote effective prevention and treatment of chronic disease
5. Work with communities to promote healthy living
6. Make care affordable
Foundational Principles of the CMS Quality Strategy

1. Eliminate disparities
2. Strengthen infrastructure and data systems
3. Enable local innovations
4. Foster learning organizations
The ACA:

- Expanded quality measure development
- Expanded public reporting initiatives to ensure ready access
- Called for use of easily understood formats
ACA: Major Expansion of Compare Websites

• Provided for creation of Physician Compare

• New reporting requirements, including:

  – Hospital Compare (e.g., value-based purchasing measures, measures on hospital-acquired conditions)

  – Nursing Home Compare (e.g., staffing data, complaints, links to state survey and certification websites)
ACA: Expansion of Online Public Reporting

New requirements for reporting on care settings, including:

- Long-term care hospitals
- Inpatient rehabilitation facilities
- Hospices
- Ambulatory surgical centers
- Certain cancer hospitals
- Inpatient psychiatric facilities
Digital Government Strategy (Executive Office of the President)

• Issued by Obama Administration in 2012

• Lays out milestone actions for enabling American people to access high-quality digital government information and services
CMS Support for the Digital Government Strategy

Support includes:

• Data contributions to Data.gov and Medicare.Data.gov

• Mobile optimization of Compare websites

• Use of Web analytics data to improve sites

• Use of visitor surveys to improve sites
Why Star Ratings for Compare Websites

• Consumers are the primary audience for Compare websites, along with other important stakeholders

• The National Quality Strategy envisions effective public reporting as a key driver for improving the health care system as a whole:
  – Consumers consult ratings
  – Consumers choose the care that is best for them and their families
  – Providers are incentivized to improve quality to retain existing patients and to attract new ones.
Principles for Star Ratings

• Report what is most important to patients in a way they can understand
• Leverage knowledge and lessons learned from existing sites
• Report only valid data!
• Not all measures are appropriate for star ratings
• Transparency of methodology and display with stakeholders
• Coordinate across all Compare sites
Star Rating on DFC
Timeline

• Star Rating will be displayed for each facility on DFC, and updated annually
• Star Rating will be included in preview reports beginning July 15, 2014
• Star Rating will be publicly reported on DFC starting with the October 2014 release
Star Rating on DFC

• Star Rating is based on Quality Measures (QMs) currently reported on DFC that assess patient health outcomes and processes of care

• Each facility is given a rating between one and five stars

⭐⭐⭐⭐⭐ Excellent
⭐⭐⭐⭐ Above Average
⭐⭐⭐ Average
⭐⭐ Below Average
⭐ Poor
Star Rating Methodology
DFC Quality Measures Used

DFC Quality Measures used in calculation of Star Rating:

– Standardized Transfusion Ratio (STrR)
– Standardized Mortality Ratio (SMR)
– Standardized Hospitalization Ratio (SHR)
– Percentage of adult hemodialysis (HD) patients who had enough wastes removed from their blood during dialysis
– Percentage of pediatric hemodialysis (HD) patients who had enough wastes removed from their blood during dialysis
– Percentage of adult peritoneal dialysis (PD) patients who had enough wastes removed from their blood during dialysis
– Percentage of adult dialysis patients who had hypercalcemia
– Percentage of adult dialysis patients who received treatment through arteriovenous fistula
– Percentage of adult patients who had a catheter left in vein longer than 90 days for their regular hemodialysis treatment

NOTE: URR and Hemoglobin measures currently reported on DFC were not included in the star rating calculation because they are topped out (national averages are 99% and < 1% respectively).
Description of Rating Methodology

• Star Rating based on the average of the QMs, with some measures weighted more heavily than others
• Weights come from an analytic method called factor analysis that identifies groups of correlated QMs
• Different weights are used in order to avoid counting some measures too heavily
  – For instance, if 4 related QMs measure a certain aspect of care and only 1 QM measures a second aspect of care, a simple average of the 5 QMs would count the first aspect of care much more heavily than the second.
Description of Rating Methodology

Before grouping the QMs using factor analysis, they were transformed as follows:

• Combined the 3 dialysis adequacy QMs into a single value
  – Adequacy as measured by Kt/V is reported on DFC separately for three groups of patients (children on HD, adults on HD, adults on PD)
  – A single adequacy measure for all patients in the facility was calculated as the weighted average of the measures for the 3 groups

• Standardized the combined Kt/V measure and each of the other 6 QMs
  – Ranking of facility according to the measure calculated as a value from 0 to 100 (e.g., percentile), with better performance on the measure corresponding to higher values
  – Resulting standardized values are directly comparable in scale (0-100), distribution (normal), and directionality (higher values indicate better performance)
Example of Standardizing a Measure
Description of Rating Methodology

• Systematic empirical methods (factor analysis) were used to identify groups or domains of correlated QMs based on January 2014 DFC data.

• The resulting groups or domains were labeled:
  – Standardized Outcomes (SHR, SMR, STrrR)
  – Other Outcomes 1 (AV fistula, tunneled catheter)
  – Other Outcomes 2 (Kt/V, hypercalcemia)
Scoring
Calculating Scores

• Domain Score: Average of the standardized values for the measures in that domain
  – If a facility is missing any measure in the domain, use a value of 50 for that measure in calculating the domain score
  – If a facility is missing values for all measures in the domain, the domain score is not calculated

• Final Score: Average of domain scores
  – PD-only facilities: Average of two domain scores
    • Other Outcomes 1 (AV fistula, tunneled catheter) domain not relevant for PD only facilities
  – Other facilities: Average of three domain scores
  – If facility is missing a needed domain score, the final score is not calculated and the facility does not receive a Star Rating
Assignment of Star Ratings

• Star Ratings are assigned according to the Final Scores as follows:
  – Facilities with top 10% final scores are given a rating of 5 stars.
  – Facilities with the next 20% highest final scores are given a rating of 4 stars.
  – Facilities within the middle 40% of final scores are given a rating of 3 stars.
  – Facilities with the next 20% lowest final scores are given a rating of 2 stars.
  – Facilities with bottom 10% final scores are given a rating of 1 star.
Rating Results
Results

• Star Ratings calculated according to this algorithm based on the January 2014 DFC data
• Included 6,033 facilities
• Carried out analyses to examine
  – Amount of missing data
  – Correlations between measures
  – Relationship between Star Ratings and original values of QMs
### Results: Missing Data

- 81% of all facilities (4,903) had all measures available
- 9% of all facilities (542) were unrated

<table>
<thead>
<tr>
<th>Measures Missing</th>
<th>Number of Facilities (%)</th>
<th>Number Unrated (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4,903 (81)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>1</td>
<td>400 (7)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>2</td>
<td>180 (3)</td>
<td>42 (23)</td>
</tr>
<tr>
<td>3</td>
<td>144 (2)</td>
<td>109 (76)</td>
</tr>
<tr>
<td>4</td>
<td>79 (1)</td>
<td>69 (87)</td>
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<tr>
<td>5</td>
<td>50 (1)</td>
<td>45 (90)</td>
</tr>
<tr>
<td>6</td>
<td>47 (1)</td>
<td>47 (100)</td>
</tr>
<tr>
<td>7</td>
<td>230 (4)</td>
<td>230 (100)</td>
</tr>
<tr>
<td>Total</td>
<td>6,033 (100)</td>
<td>542 (9)</td>
</tr>
</tbody>
</table>
Results: Correlations

- Domains identified by factor analysis group measures with highest correlations

<table>
<thead>
<tr>
<th>Measures</th>
<th>STTR</th>
<th>SHR</th>
<th>SMR</th>
<th>All Kt/V</th>
<th>Hypercalcemia</th>
<th>AVF</th>
<th>Catheter &gt;90</th>
</tr>
</thead>
<tbody>
<tr>
<td>STTR</td>
<td>1.0</td>
<td>0.40</td>
<td>0.22</td>
<td>0.09</td>
<td>-0.002</td>
<td>0.11</td>
<td>0.15</td>
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<tr>
<td>SHR</td>
<td>1.00</td>
<td>0.26</td>
<td></td>
<td>0.11</td>
<td>0.005</td>
<td>0.13</td>
<td>0.19</td>
</tr>
<tr>
<td>SMR</td>
<td>1.00</td>
<td></td>
<td></td>
<td>0.08</td>
<td>0.05</td>
<td>0.17</td>
<td>0.11</td>
</tr>
<tr>
<td>All Kt/V</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>0.19</td>
<td>0.06</td>
<td>0.13</td>
</tr>
<tr>
<td>Hypercalcemia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>0.09</td>
<td>0.05</td>
</tr>
<tr>
<td>AVF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>0.45</td>
</tr>
<tr>
<td>Catheter &gt;90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
</tbody>
</table>
Results: Relationship between Star Ratings and QMs

- Facilities with higher Star Ratings have better average values for original QMs

<table>
<thead>
<tr>
<th>Measure</th>
<th>Overall</th>
<th>Star</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>STrR</td>
<td>1.50</td>
<td>1.20</td>
<td>1.00</td>
</tr>
<tr>
<td>SHR</td>
<td>1.28</td>
<td>1.12</td>
<td>0.99</td>
</tr>
<tr>
<td>SMR</td>
<td>1.34</td>
<td>1.11</td>
<td>1.02</td>
</tr>
<tr>
<td>All Kt/V</td>
<td>75.5%</td>
<td>81.8%</td>
<td>86.8%</td>
</tr>
<tr>
<td>Hypercalcemia</td>
<td>5.7%</td>
<td>4.6%</td>
<td>3.4%</td>
</tr>
<tr>
<td>AVF</td>
<td>48.6%</td>
<td>56.0%</td>
<td>62.1%</td>
</tr>
<tr>
<td>Catheter &gt; 90</td>
<td>20.3%</td>
<td>14.7%</td>
<td>10.6%</td>
</tr>
</tbody>
</table>
Summary of Star Rating Algorithm

1. Calculate Domain Scores
   • Average of standardized values for measures within the domain
   • Use a score of 50 for missing measures in a domain

2. Calculate Final Score
   • Average of domain scores
   • 1 measure per domain required except for PD-only facilities

3. Assign Star Ratings according to Final Scores
   • 10% achieve 1 Star
   • 20% achieve 2 Stars
   • 40% achieve 3 Stars
   • 20% achieve 4 Stars
   • 10% achieve 5 Stars
Maintenance and Updates
• Systematic empirical method described here will be used to update QM groupings and maintain ratings annually and incorporate new or revised DFC QMs

• Ratings will be analyzed over time to assess stability of the overall rating

• CMS will consider factors other than quality measures for inclusion in the Star Ratings System in the future

• CMS welcomes input on methods from stakeholders
Next Steps
Next Steps

• The Facility Star Rating will be available on the Dialysis Facility Compare Preview Report

• DFC Preview Reports as well as Technical Documentation will be available on www.DialysisReports.org beginning July 15, 2014

• DFC Comment Period: July 15 – August 15, 2014

• If you have general comments on the Star Rating System methodology please contact UM-KECC directly at DialysisData@umich.edu
Question and Answer Session
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