NATIONAL QUALITY FORUM
Driving measurable health improvements together

Memo

November 17, 2020

To: Consensus Standards Approval Committee (CSAC)

From: Surgery Project Team

Re: Surgery Spring 2020[a]

CSAC Action Required

The CSAC will review recommendations from the Surgery project at its November 17-18, 2020 meeting and vote on whether to uphold the recommendations from the Committee.

This memo includes a summary of the project, measure recommendations, themes identified and responses to the public and member comments, and the results from the NQF member expression of support. The following document accompanies this memo:

1. **Surgery Spring 2020 Draft Report**. The draft report has been updated to reflect the changes made following the Standing Committee's discussion of public and member comments. The complete draft report and supplemental materials are available on the project webpage.

Background

Given the increasing rates and costs associated with inpatient and outpatient surgeries in the United States, performance measurement and reporting provide an opportunity to improve the safety and quality of care received by patients undergoing surgery and surgical procedures. In 2010, 28.6 million ambulatory surgery visits to hospitals and ambulatory surgical centers occurred, representing 48.3 million procedures.[1] In 2014, there were 17.2 million hospital visits that included at least one surgery.[2] Of these surgeries, over half occurred in a hospital-owned ambulatory surgical center.[2]

The Surgery Standing Committee oversees NQF's portfolio of Surgery measures that includes measures for perioperative safety, general surgery, and a range of specialties including cardiac, cardiothoracic, colorectal, ocular, orthopedic, urogynecologic, and vascular surgery.

Draft Report

The Surgery Spring 2020 draft report presents the results of the evaluation of one measure considered under the Consensus Development Process (CDP). This measure was recommended for endorsement.

The measures were evaluated against the 2019 version of the measure evaluation criteria.

	Maintenance	New	Total
Measures under consideration	1	0	1

[a] This memo is funded by the Centers for Medicare and Medicaid Services under contract HHSM-500-2017-00060I Task Order HHSM-500-T0001.

	Maintenance	New	Total
Measures recommended for endorsement	1	0	1

CSAC Action Required

Pursuant to the CDP, the CSAC is asked to consider endorsement of one candidate consensus measure.

Measures Recommended for Endorsement

- NQF 2687 Hospital Visits after Hospital Outpatient Surgery (The Centers for Medicare & Medicaid Services (CMS)/Yale New Haven Health Services Corporation – Center for Outcomes Research and Evaluation (CORE))

Overall Suitability for Endorsement: Yes-13; No-0

Comments and Their Disposition

NQF received one comment from an NQF member organization pertaining to the draft report and to the measures under consideration.

The comment was forwarded to the developer and then the Committee met to discuss the comment and the developer's response.

Member Expression of Support

Throughout the 16-week continuous public commenting period, NQF members had the opportunity to express their support ("support" or "do not support") for each measure submitted for endorsement consideration to inform the Committee's recommendations. No NQF members provided their expressions of support.

Removal of NQF Endorsement

One measure previously endorsed by NQF has not been re-submitted, and endorsement has been removed.

Measure	Measure Description	Reason for Removal of Endorsement
2681 Perioperative Temperature Management	Percentage of patients, regardless of age, who undergo surgical or therapeutic procedures under general or neuraxial anesthesia of 60 minutes duration or longer for whom at least one body temperature greater than or equal to 35.5 degrees Celsius (or 95.9 degrees Fahrenheit) was achieved within the 30 minutes immediately before or the 15 minutes immediately after anesthesia end time	The developer did not seek re-endorsement.

References

1 Hall MJ. Ambulatory Surgery Data From Hospitals and Ambulatory Surgery Centers: United States, 2010. 2017;(102):15.

2 Steiner CA, Karaca Z, Moore BJ, et al. Surgeries in Hospital-Based Ambulatory Surgery and Hospital Inpatient Settings, 2014: Statistical Brief #223. In: *Healthcare Cost and Utilization Project (HCUP) Statistical Briefs*. Rockville (MD): Agency for Healthcare Research and Quality (US); 2006. http://www.ncbi.nlm.nih.gov/books/NBK442035/. Last accessed March 2020.

Appendix A: CSAC Checklist

The table below lists the key considerations to inform the CSAC's review of the measures submitted for endorsement consideration.

Key Consideration	Yes/No	Notes
Were there any process concerns raised during the CDP project? If so, briefly explain.	No	
Did the Standing Committee receive requests for reconsideration? If so, briefly explain.	No	
Did the Standing Committee overturn any of the Scientific Methods Panel's ratings of Scientific Acceptability? If so, state the measure and why the measure was overturned.	No	
If a recommended measure is a related and/or competing measure, was a rationale provided for the Standing Committee's recommendation? If not, briefly explain.	Yes	
Were any measurement gap areas addressed? If so, identify the areas.	No	
Are there additional concerns that require CSAC discussion? If so, briefly explain.	No	

Appendix B: Measures Not Recommended for Endorsement

The Surgery Standing Committee recommends all candidate measures for endorsement.

Appendix C: NQF Member Expression of Support Results

No NQF members provided their expression of support.

Appendix D: Details of Measure Evaluation

Rating Scale: H=High; **M**=Moderate; **L**=Low; **I**=Insufficient; **NA**=Not Applicable

Measures Recommended

2687 Hospital Visits after Hospital Outpatient Surgery

Submission

Description: Facility-level risk-standardized rate of acute, unplanned hospital visits within 7 days of a procedure performed at a hospital outpatient department (HOPD) among Medicare Fee-For-Service (FFS) patients aged 65 years and older. An unplanned hospital visit is defined as an emergency department (ED) visit, observation stay, or unplanned inpatient admission.

Numerator Statement: The outcome is all-cause, unplanned hospital visits, defined as 1) an inpatient admission directly after

the surgery or 2) an unplanned hospital visit (emergency department [ED] visit, observation stay, or unplanned inpatient admission) occurring after discharge and within 7 days of the surgical procedure.

Denominator Statement: Outpatient same-day surgeries performed at HOPDs for Medicare FFS patients aged 65 years and older.

Exclusions: 1. Surgeries for patients without continuous enrollment in Medicare FFS Parts A and B in the 7 days after the surgery.

2. Surgeries for patients who have an ED visit on the same day but billed on a separate claim, unless the ED visit has a diagnosis indicative of a complication of care.

3. Surgeries that are billed on the same hospital claim as an emergency department (ED) visit and that occur on the same calendar day, unless the ED visit has a diagnosis indicative of a complication of care.

4. Surgeries that are billed on the same hospital outpatient claim and that occur after the ED visit.

5. Surgeries that are billed on the same outpatient claim as an observation stay.

Adjustment/Stratification: Statistical risk model
Level of Analysis: Facility
Setting of Care: Outpatient Services
Type of Measure: Outcome
Data Source: Claims, Enrollment Data
Measure Steward: The Centers for Medicare & Medicaid Services (CMS)

STANDING COMMITTEE MEETING 07/08/2020

1. Importance to Measure and Report: The measure meets the Importance criteria

(1a. Evidence, 1b. Performance Gap)

1a. Evidence: **Y-13; N-0;** 1b. Performance Gap: **H-2**; **M-11**; **L-0**; **I-0**

Rationale:

- The developer noted that almost all of the evidence has been updated since the last submission in 2015.
- The goal of this measure is to reduce adverse patient outcomes associated with preparation for same-day surgery, the surgery itself, and follow-up care, by capturing unplanned hospital visits following outpatient surgery and making these visits more visible to providers and patients.
- The developer provided a list of strategies and interventions to improve same-day outpatient surgical procedural quality and reduce unplanned hospital visits following outpatient surgery:
    - Appropriate patient selection
    - Appropriate patient education
    - Improving technical quality, including procedural technique and anesthesia
    - Appropriate management of post-operative nausea, vomiting, and pain
    - Educating patients about potential adverse events, whom to contact with questions, and when and where to seek follow-up care
- The developer provided a list of studies supporting actions providers can take to improve care:
    - Use of multi-modal approaches for treatment of post-operative pain
    - Routine multi-modal nausea and vomiting prophylaxis

2687 Hospital Visits after Hospital Outpatient Surgery

  - Identifying and managing patient-level risk factors, such as prevention of hyperglycemia for patients with diabetes
- The Committee noted the link to processes hospitals can perform to reduce the risk of unplanned visits and the evidence supporting the link between the processes and outcomes.
- Scores on this measure are a ratio of predicted hospital visits to expected hospital visits. Lower scores represent higher quality.
- The developer provided a distribution of performance scores (risk-standardized hospital visit ratios (RSHVRs)) for facilities for the performance period of January 1, 2018-December 31, 2018. The data included 3,874 facilities and reported:

	Mean	Std Dev	Min	25th	50th	75th	Max
RSHVRs	1.01	0.15	0.54	0.93	0.99	1.07	2.39

- The developer explored disparities by Medicare-Medicaid dual-eligibility status and Agency for Healthcare Research and Quality Socioeconomic Status (AHRQ SES) Index.
- The Committee had no concerns with the performance gap and felt it supported a national performance measure.

2. Scientific Acceptability of Measure Properties: <u>The measure meets the Scientific Acceptability criteria</u>

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity

2a. Reliability: **Y-13; N-0**; 2b. Validity: **Y-12; No-1**

<u>Rationale</u>:

- This measure was reviewed by a subgroup of the Scientific Methods Panel (SMP). The full Panel accepted the subgroup's rating and did not pull the measure for discussion.
- Reliability testing was conducted at the measure score level using signal-to-noise analysis (Adams' method) with interquartile ranges (IQRs); minimum 30 procedures: 0.839 (median); 0.759 (all facilities)
- The SMP subgroup noted few concerns with the clarity of the specifications (e.g., risk adjustment, qualifying events, exclusions), and generally agreed the testing approach was acceptable.
- The SMP's rating for reliability: High (H-5; M-4; L-0; I-0)
- The Committee had no concerns regarding reliability and voted to accept the SMP's rating.
- Validity testing was conducted at the measure score level. The measure was compared with hospital-wide readmission rate (HWR) and results indicated a weak positive correlation as expected by developers (0.033, p = 0.07).
- The developer also presented face validity results. However, because this is a maintenance measure, empirical validity testing is required and was used as the basis for evaluation.
- Risk model discrimination and calibration: c statistic = 0.684; developer reports good discrimination and predictive ability based on risk decile plot.
- The Panel subgroup expressed concern, but generally accepted the validity testing results as a weak but acceptable demonstration of validity.
- The SMP's rating for validity: Moderate (H-1; M-7; L-1; I-0).
- A Committee member questioned whether the term "hospital outpatient department (HOPD)" would be clearly understood by patients, raising a question of face validity.
- The Committee suggested validity testing strategies that could more adequately demonstrate validity than the current testing: demonstrating a relationship between measure score and performance on recommended processes, tying patients with unplanned visits to other poor outcomes, or conducting a known groups analysis.
- Finally, the Committee asked the developer to provide more details on the interaction of facility case-mix and measure results.
- The developer clarified that case-mix adjustment is performed by body part and type of surgery and that this results in good discrimination at the patient level. This adjustment is critical as the developer wanted to include a variety of procedures in the measure for a common quality signal and to increase the volume of patients included in the measure.
- The Committee was satisfied with this discussion and voted to accept the SMP's rating.

3. Feasibility: H-8; M-5; L-0; I-0

2687 Hospital Visits after Hospital Outpatient Surgery

(3a. Clinical data generated during care delivery; 3b. Electronic sources; 3c. Susceptibility to inaccuracies/ unintended consequences identified 3d. Data collection strategy can be implemented)

Rationale:

- The Committee had no concerns regarding feasibility, noting that the measure uses data that are readily available.

4. Use and Usability

4a. Use; 4a1. Accountability and transparency; 4a2. Feedback on the measure by those being measured and others; 4b. Usability; 4b1. Improvement; 4b2. The benefits to patients outweigh evidence of unintended negative consequences to patients)

4a. Use: **Pass-13; No Pass-0;** 4b. Usability*:* **H-1; M-11; L-1; I-0**

Rationale:

- The Committee had no concerns regarding feasibility or use, noting that the measure is currently in use, is reported on Hospital Compare, and is part of CMS' Hospital Outpatient Quality Reporting Program.
- The Committee asked the developer for additional information on performance improvement since the measure has been in use.
- The developer responded that the measure was only publicly reported starting at the beginning of 2020 and that it may be too soon to see improvement.
- A Committee member noted that the strong performance gap would be useful for patients evaluating different providers.

5. Related and Competing Measures

- The measure is related to:
  - 0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure
  - 1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)
  - 2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy
  - 3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers
  - 3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures
  - 3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures
  - 3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy
- The developer has harmonized the related measures to the extent possible, including the unplanned visits algorithm.
- The Committee asked why the related ambulatory surgery center (ASC) measures were split out by type of procedure.
- The developer clarified that, in contrast to hospitals, ASCs tend to be owned by a group of specialists and that differences in patient cohort can make comparison challenging in those situations.
- The Committee felt it made sense to maintain the distinct measures given the differences discussed.

6. Standing Committee Recommendation for Endorsement: **Y-13**; **N-0**

7. Public and Member Comment

- One comment was received after the measure evaluation meeting. The comment raised concerns regarding whether the measure's restriction to Medicare fee-for-service patients impacts the measure's validity. The developer responded that the risk model shows good discrimination across the spectrum of risk, making it unlikely that differences between Medicare Advantage and fee-for-service patients would affect scores on a regional level. The Committee concurred.

8. CSAC Vote: Y-X; N-X (November 18, 2020)

9. Appeals

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Surgery Spring 2020 Review Cycle

CSAC Review and Endorsement

November 17, 2020

Funded by the Centers for Medicare and Medicaid Services under contract HHSM-500-2017-00060I Task Order HHSM-500-T0001.

Standing Committee Recommendations

- One measure reviewed for Spring 2020
  - One measure reviewed by the Scientific Methods Panel
- One measure recommended for endorsement
  - **NQF 2687** Hospital Visits after Hospital Outpatient Surgery (Maintenance Measure)

Public and Member Comment and Member Expressions of Support

- One comment received
  - The comment raised concerns regarding whether the measure's restriction to Medicare fee-for-service patients impacts the measure's validity. The developer responded that the risk model shows good discrimination across the spectrum of risk, making it unlikely that differences between Medicare Advantage and fee-for-service patients would affect scores on a regional level. The Committee concurred.
- No NQF member of expressions of support or non-support received

NATIONAL QUALITY FORUM

Questions?

- Project team:
  - Amy Moyer, MS, PMP, Director
  - Janaki Panchal, MSPH, Manager
  - Karri Albanese, BA, Analyst
  - Mike DiVecchia, MBA, PMP, Project Manager

- Project webpage: http://www.qualityforum.org/Surgery_2017-2018.aspx

- Project email address: surgery@qualityforum.org

THANK YOU.

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Surgery, Spring 2020 Cycle: CDP Report

DRAFT REPORT FOR CSAC REVIEW
NOVEMBER 17, 2020

This report is funded by the Centers for Medicare and Medicaid Services under contract HHSM-500-2017-00060I –75FCMC19F0007.

http://www.qualityforum.org

Contents

Executive Summary

In 2010, 28.6 million ambulatory surgery visits to hospitals and ambulatory surgical centers occurred, representing 48.3 million surgical and nonsurgical procedures.[1] In 2014, there were 17.2 million hospital visits that included at least one surgery.[2] Of these surgeries, over half occurred in a hospital-owned ambulatory surgical center.[2]

Quality measurement in surgery is essential to improve outcomes for the millions of individuals undergoing surgery and surgical procedures each year. To date, the National Quality Forum (NQF) has endorsed more than 60 measures that address surgical care including perioperative safety, general surgery, and a range of specialties including cardiac, cardiothoracic, colorectal, ocular, orthopedic, urogynecologic, and vascular surgery.

For this project, the Standing Committee evaluated one measure undergoing maintenance review against NQF's standard evaluation criteria. The Committee recommended the measure for endorsement. The recommended measure is:

- **NQF 2687** Hospital Visits after Hospital Outpatient Surgery (Yale New Haven Health Services Corporation – Center for Outcomes Research and Evaluation (CORE))

A brief summary of the measure currently under review is included in the body of the report; a detailed summary of the Committee's discussion and ratings of the criteria for the measure is in Appendix A.

Introduction

Given the increasing rates and costs associated with inpatient and outpatient surgeries in the United States, performance measurement and reporting provide an opportunity to improve the safety and quality of care received by patients undergoing surgery and surgical procedures. In 2010, 28.6 million ambulatory surgery visits to hospitals and ambulatory surgical centers occurred, representing 48.3 million procedures.[1] In 2014, there were 17.2 million hospital visits that included at least one surgery.[2] Of these surgeries, over half occurred in a hospital-owned ambulatory surgical center.[2]

Ambulatory surgeries have increased over time as a result of less invasive surgical techniques; patient conveniences, such as less time spent undergoing a procedure; and lower costs.[3,4] Private payers accounted for 48.6 percent of ambulatory surgery visits, with Medicare and Medicaid covering 30.8 percent and 14.0 percent of visits, respectively.[2] However, there are risks associated with ambulatory surgeries including increased pain, longer time than anticipated to return to daily activities, and unplanned subsequent hospital visits following surgery.[5,6] With the continued growth in the outpatient surgery market, monitoring and assessing the quality of the services provided holds great importance.

NQF Portfolio of Performance Measures for Surgery Conditions

The Surgery Standing Committee (Appendix C) oversees NQF's portfolio of Surgery measures (Appendix B) that includes measures for perioperative safety, general surgery, and a range of specialties including cardiac, cardiothoracic, colorectal, ocular, orthopedic, urogynecologic, and vascular surgery. This portfolio contains 66 measures: 12 process measures, 43 outcome and resource use measures, four structural measures, and seven composite measures (see table below).

Table 1. NQF Surgery Portfolio of Measures

	Structure	Process	Outcome/Resource Use	Composite
Abdominal and Colorectal Surgery	0	1	1	0
Cardiac Surgery	3	5	17	7
General Surgery	0	0	3	0
Cross-cutting (Inpatient & Outpatient Surgery)	0	0	2	0
Cross-Cutting (Inpatient Surgery)	0	0	2	0
Cross-Cutting (Outpatient Surgery)	0	0	2	0
Ocular Surgery	0	0	5	0
Orthopedic Surgery	0	0	4	0
Thoracic Surgery	1	0	1	0
Urogynecology/Gynecology	0	4	0	0
Vascular Surgery	0	2	6	0
Total	4	12	43	7

Additional measures related to surgery have been assigned to other portfolios. These include healthcare-associated infection measures (Patient Safety), care coordination measures (Geriatrics and

Palliative Care), patient experience measures (Patient Experience and Function), imaging efficiency measures (Cost and Resource Use), and a variety of condition- or procedure-specific outcome measures (Cardiovascular, Cancer, Renal, etc.).

Surgery Measure Evaluation

On July 8, 2020 the Surgery Standing Committee evaluated one measure undergoing maintenance review against NQF's standard measure evaluation criteria.

Table 2. Surgery Measure Evaluation Summary

	Maintenance	New	Total
Measures under consideration	1	0	1
Measures recommended for endorsement	1	0	1

Comments Received Prior to Committee Evaluation

NQF solicits comments on endorsed measures on an ongoing basis through the Quality Positioning System (QPS). In addition, NQF solicits comments for a continuous 16-week period during each evaluation cycle via an online tool located on the project webpage. For this evaluation cycle, the commenting period opened on May 11, 2020. As of June 19, one comment was submitted and shared with the Committee prior to the measure evaluation meeting (Appendix F).

Comments Received After Committee Evaluation

The continuous 16-week public commenting period with NQF member support closed on September 14, 2020. Following the Committee's evaluation of the measures under consideration, NQF received one comment from one organization (a member organization) pertaining to the draft report and to the measures under consideration. All comments for each measure under consideration have been summarized in Appendix A.

Throughout the 16-week continuous public commenting period, NQF members had the opportunity to express their support ("support" or "do not support") for each measure submitted for endorsement consideration to inform the Committee's recommendations. No NQF members provided their expression of support or non-support.

Summary of Measure Evaluation

The following brief summaries of the measure evaluation highlight the major issues that the Committee considered. Details of the Committee's discussion and ratings of the criteria for each measure are included in Appendix A.

2687 Hospital Visits after Hospital Outpatient Surgery (Yale New Haven Health Services Corporation – Center for Outcomes Research and Evaluation (CORE)): Recommended

Description: Facility-level risk-standardized rate of acute, unplanned hospital visits within 7 days of a procedure performed at a hospital outpatient department (HOPD) among Medicare Fee-For-Service

(FFS) patients aged 65 years and older. An unplanned hospital visit is defined as an emergency department (ED) visit, observation stay, or unplanned inpatient admission.; **Measure Type**: Outcome; **Level of Analysis**: Facility; **Setting of Care**: Outpatient Services; **Data Source**: Claims, Enrollment Data

The Standing Committee recommended the measure for continued endorsement. The Committee reviewed the updated evidence provided for this evaluation cycle. It noted the link to processes hospitals can perform to reduce the risk of unplanned visits and the evidence supporting the link between the processes and outcomes. The Committee had no concerns with the performance gap and felt it supported a national performance measure.

The Scientific Methods Panel (SMP) evaluated the reliability and validity of the measure. The Standing Committee voted to accept the ratings of the Panel. There was strong Committee support for the SMP's high rating on reliability with no concerns raised. Although the Committee accepted the SMP's moderate rating for validity, it discussed several concerns. A Committee member questioned whether the term "hospital outpatient department (HOPD)" would be clearly understood by patients, raising a question of face validity. The Committee suggested validity testing strategies that could more adequately demonstrate validity than the current testing: demonstrating a relationship between measure score and performance on recommended processes, tying patients with unplanned visits to other poor outcomes, or conducting a known groups analysis. Finally, the Committee asked the developer to provide more details on the interaction of facility case-mix and measure results. The developer clarified that case-mix adjustment is performed by body part and type of surgery and that this results in good discrimination at the patient level. This adjustment is critical as the developer wanted to include a variety of procedures in the measure for a common quality signal and to increase the volume of patients included in the measure. The Committee was satisfied with this discussion.

The Committee had no concerns regarding feasibility or use, noting that the measure is currently in use, is reported on Hospital Compare, and is part of the Centers for Medicare & Medicaid Services' (CMS's) Hospital Outpatient Quality Reporting Program. The Committee asked the developer for additional information on performance improvement since the measure has been in use. The developer responded that the measure was only publicly reported starting at the beginning of 2020 and that it may be too soon to see improvement. A Committee member noted that the strong performance gap would be useful for patients evaluating different providers. The Committee observed that there are several related measures with a similar focus but different target populations. It was highlighted that the developer has harmonized the related measures to the extent possible, including the unplanned visits algorithm. There was a brief discussion of the related ambulatory surgery center (ASC) measures and why these measures were split out by type of procedure. The developer clarified that, in contrast to hospitals, ASCs tend to be owned by a group of specialists. Differences in patient cohort can make comparison challenging in those situations. The Committee felt it made sense to maintain the distinct measures given the differences discussed.

Measures Withdrawn from Consideration

One measure previously endorsed by NQF has been withdrawn during the endorsement evaluation process. Endorsement for this measure will be removed.

Table 3. Measures Withdrawn from Consideration

Measure	Reason for withdrawal
2681 Perioperative Temperature Management	The developer did not seek re-endorsement.

References

1 Hall MJ. Ambulatory Surgery Data From Hospitals and Ambulatory Surgery Centers: United States, 2010. 2017;(102):15.

2 Steiner CA, Karaca Z, Moore BJ, et al. Surgeries in Hospital-Based Ambulatory Surgery and Hospital Inpatient Settings, 2014: Statistical Brief #223. In: *Healthcare Cost and Utilization Project (HCUP) Statistical Briefs*. Rockville (MD): Agency for Healthcare Research and Quality (US); 2006. http://www.ncbi.nlm.nih.gov/books/NBK442035/. Last accessed March 2020.

3 Munnich EL, Parente ST. Procedures take less time at ambulatory surgery centers, keeping costs down and ability to meet demand up. *Health Aff (Millwood)*. 2014;33(5):764-769.

4 Accounting for the cost of US health care: A new look at why Americans spend more | McKinsey. https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/accounting-for-the-cost-of-us-health-care. Last accessed March 2020.

5 Manohar A, Cheung K, Wu CL, et al. Burden incurred by patients and their caregivers after outpatient surgery: a prospective observational study. *Clin Orthop Relat Res*. 2014;472(5):1416-1426.

6 Fox JP, Vashi AA, Ross JS, et al. Hospital-based, acute care after ambulatory surgery center discharge. *Surgery*. 2014;155(5):743-753.

Appendix A: Details of Measure Evaluation

Rating Scale: H=High; **M**=Moderate; **L**=Low; **I**=Insufficient; **NA**=Not Applicable

Measures Recommended

2687 Hospital Visits after Hospital Outpatient Surgery

Submission | Specifications

Description: Facility-level risk-standardized rate of acute, unplanned hospital visits within 7 days of a procedure performed at a hospital outpatient department (HOPD) among Medicare Fee-For-Service (FFS) patients aged 65 years and older. An unplanned hospital visit is defined as an emergency department (ED) visit, observation stay, or unplanned inpatient admission.

Numerator Statement: The outcome is all-cause, unplanned hospital visits, defined as 1) an inpatient admission directly after

the surgery or 2) an unplanned hospital visit (emergency department [ED] visit, observation stay, or unplanned inpatient admission) occurring after discharge and within 7 days of the surgical procedure.

Denominator Statement: Outpatient same-day surgeries performed at HOPDs for Medicare FFS patients aged 65 years and older.

Exclusions: 1. Surgeries for patients without continuous enrollment in Medicare FFS Parts A and B in the 7 days after the surgery.

2. Surgeries for patients who have an ED visit on the same day but billed on a separate claim, unless the ED visit has a diagnosis indicative of a complication of care.

3. Surgeries that are billed on the same hospital claim as an emergency department (ED) visit and that occur on the same calendar day, unless the ED visit has a diagnosis indicative of a complication of care.

4. Surgeries that are billed on the same hospital outpatient claim and that occur after the ED visit.

5. Surgeries that are billed on the same outpatient claim as an observation stay.

Adjustment/Stratification: Statistical risk model
Level of Analysis: Facility
Setting of Care: Outpatient Services
Type of Measure: Outcome
Data Source: Claims, Enrollment Data
Measure Steward: The Centers for Medicare & Medicaid Services (CMS)

STANDING COMMITTEE MEETING 07/08/2020

1. Importance to Measure and Report: <u>The measure meets the Importance criteria</u>

(1a. Evidence, 1b. Performance Gap)

1a. Evidence: **Y-13; N-0;** 1b. Performance Gap: **H-2**; **M-11**; **L-0**; **I-0**

<u>Rationale</u>:

- The developer noted that almost all of the evidence has been updated since the last submission in 2015.
- The goal of this measure is to reduce adverse patient outcomes associated with preparation for same-day surgery, the surgery itself, and follow-up care, by capturing unplanned hospital visits following outpatient surgery and making these visits more visible to providers and patients.
- The developer provided a list of strategies and interventions to improve same-day outpatient surgical procedural quality and reduce unplanned hospital visits following outpatient surgery:
    - Appropriate patient selection
    - Appropriate patient education
    - Improving technical quality, including procedural technique and anesthesia
    - Appropriate management of post-operative nausea, vomiting, and pain
    - Educating patients about potential adverse events, whom to contact with questions, and when and where to seek follow-up care
- The developer provided a list of studies supporting actions providers can take to improve care:
    - Use of multi-modal approaches for treatment of post-operative pain

2687 Hospital Visits after Hospital Outpatient Surgery

- Routine multi-modal nausea and vomiting prophylaxis
- Identifying and managing patient-level risk factors, such as prevention of hyperglycemia for patients with diabetes

- The Committee noted the link to processes hospitals can perform to reduce the risk of unplanned visits and the evidence supporting the link between the processes and outcomes.
- Scores on this measure are a ratio of predicted hospital visits to expected hospital visits. Lower scores represent higher quality.
- The developer provided a distribution of performance scores (risk-standardized hospital visit ratios (RSHVRs)) for facilities for the performance period of January 1, 2018-December 31, 2018. The data included 3,874 facilities and reported:

	Mean	Std Dev	Min	25th	50th	75th	Max
RSHVRs	1.01	0.15	0.54	0.93	0.99	1.07	2.39

- The developer explored disparities by Medicare-Medicaid dual-eligibility status and Agency for Healthcare Research and Quality Socioeconomic Status (AHRQ SES) Index.
- The Committee had no concerns with the performance gap and felt it supported a national performance measure.

2. Scientific Acceptability of Measure Properties: <u>The measure meets the Scientific Acceptability criteria</u>

(2a. Reliability - precise specifications, testing; 2b. Validity - testing, threats to validity

2a. Reliability: **Y-13; N-0**; 2b. Validity: **Y-12; No-1**

<u>Rationale</u>:

- This measure was reviewed by a subgroup of the Scientific Methods Panel (SMP). The full Panel accepted the subgroup's rating and did not pull the measure for discussion.
- Reliability testing was conducted at the measure score level using signal-to-noise analysis (Adams' method) with interquartile ranges (IQRs); minimum 30 procedures: 0.839 (median); 0.759 (all facilities)
- The SMP subgroup noted few concerns with the clarity of the specifications (e.g., risk adjustment, qualifying events, exclusions), and generally agreed the testing approach was acceptable.
- The SMP's rating for reliability: High (H-5; M-4; L-0; I-0)
- The Committee had no concerns regarding reliability and voted to accept the SMP's rating.
- Validity testing was conducted at the measure score level. The measure was compared with hospital-wide readmission rate (HWR) and results indicated a weak positive correlation as expected by developers (0.033, p = 0.07).
- The developer also presented face validity results. However, because this is a maintenance measure, empirical validity testing is required and was used as the basis for evaluation.
- Risk model discrimination and calibration: c statistic = 0.684; developer reports good discrimination and predictive ability based on risk decile plot.
- The Panel subgroup expressed concern, but generally accepted the validity testing results as a weak but acceptable demonstration of validity.
- The SMP's rating for validity: Moderate (H-1; M-7; L-1; I-0).
- A Committee member questioned whether the term "hospital outpatient department (HOPD)" would be clearly understood by patients, raising a question of face validity.
- The Committee suggested validity testing strategies that could more adequately demonstrate validity than the current testing: demonstrating a relationship between measure score and performance on recommended processes, tying patients with unplanned visits to other poor outcomes, or conducting a known groups analysis.
- Finally, the Committee asked the developer to provide more details on the interaction of facility case-mix and measure results.
- The developer clarified that case-mix adjustment is performed by body part and type of surgery and that this results in good discrimination at the patient level. This adjustment is critical as the developer wanted to include a variety of procedures in the measure for a common quality signal and to increase the volume of patients included in the measure.
- The Committee was satisfied with this discussion and voted to accept the SMP's rating.

2687 Hospital Visits after Hospital Outpatient Surgery

3. Feasibility: H-8; M-5; L-0; I-0

(3a. Clinical data generated during care delivery; 3b. Electronic sources; 3c. Susceptibility to inaccuracies/ unintended consequences identified 3d. Data collection strategy can be implemented)

Rationale:

- The Committee had no concerns regarding feasibility, noting that the measure uses data that are readily available.

4. Use and Usability

4a. Use; 4a1. Accountability and transparency; 4a2. Feedback on the measure by those being measured and others; 4b. Usability; 4b1. Improvement; 4b2. The benefits to patients outweigh evidence of unintended negative consequences to patients)

4a. Use: **Pass-13; No Pass-0;** 4b. Usability*:* **H-1; M-11; L-1; I-0**

Rationale:

- The Committee had no concerns regarding feasibility or use, noting that the measure is currently in use, is reported on Hospital Compare, and is part of CMS' Hospital Outpatient Quality Reporting Program.
- The Committee asked the developer for additional information on performance improvement since the measure has been in use.
- The developer responded that the measure was only publicly reported starting at the beginning of 2020 and that it may be too soon to see improvement.
- A Committee member noted that the strong performance gap would be useful for patients evaluating different providers.

5. Related and Competing Measures

- The measure is related to:
  - 0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure
  - 1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)
  - 2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy
  - 3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers
  - 3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures
  - 3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures
  - 3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy
- The developer has harmonized the related measures to the extent possible, including the unplanned visits algorithm.
- The Committee asked why the related ambulatory surgery center (ASC) measures were split out by type of procedure.
- The developer clarified that, in contrast to hospitals, ASCs tend to be owned by a group of specialists and that differences in patient cohort can make comparison challenging in those situations.
- The Committee felt it made sense to maintain the distinct measures given the differences discussed.

6. Standing Committee Recommendation for Endorsement: **Y-13**; **N-0**

7. Public and Member Comment

- One comment was received after the measure evaluation meeting. The comment raised concerns regarding whether the measure's restriction to Medicare fee-for-service patients impacts the measure's validity. The developer responded that the risk model shows good discrimination across the spectrum of risk, making it unlikely that differences between Medicare Advantage and fee-for-service patients would affect scores on a regional level. The Committee concurred.

8. Consensus Standards Approval Committee (CSAC) Endorsement Decision: Yes-X; No-X (November 17, 2020 [Endorsed or Not Endorsed])

2687 Hospital Visits after Hospital Outpatient Surgery
The CSAC upheld [or did not uphold] the Standing Committee's decision to recommend the measure for endorsement.
9. Appeals

Appendix B: Surgery Portfolio—Use in Federal Programs[a]

NQF #	Title	Federal Programs: Finalized or Implemented as of July 19, 2020
0114	Risk-Adjusted Postoperative Renal Failure	Merit-Based Incentive Payment System (MIPS) Program
0115	Risk-Adjusted Surgical Re-exploration	MIPS Program
0119	Risk-Adjusted Operative Mortality for CABG	MIPS Program
0129	Risk-Adjusted Postoperative Prolonged Intubation (Ventilation)	MIPS Program
0130	Risk-Adjusted Deep Sternal Wound Infection	MIPS Program
0131	Risk-Adjusted Stroke/Cerebrovascular Accident	MIPS Program
0236	Coronary Artery Bypass Graft (CABG): Preoperative Beta-Blocker in Patients with Isolated CABG Surgery	MIPS Program
0465	Perioperative Anti-platelet Therapy for Patients undergoing Carotid Endarterectomy	MIPS Program
0564/0564e	Cataracts: Complications within 30 Days Following Cataract Surgery Requiring Additional Surgical Procedures	MIPS Program
0565/0565e	Cataracts: 20/40 or Better Visual Acuity within 90 Days Following Cataract Surgery	MIPS Program; Medicaid Promoting Interoperability Program for Eligible Professionals
0733	Operative Mortality Stratified by the 5 STAT Mortality Categories	MIPS Program
1523	Rate of Open Repair of Abdominal Aortic Aneurysms (AAA) Where Patients Are Discharged Alive	MIPS Program
1534	In-hospital mortality following elective EVAR of AAAs	MIPS Program
1540	Postoperative Stroke or Death in Asymptomatic Patients undergoing Carotid Endarterectomy	MIPS Program
1543	Postoperative Stroke or Death in Asymptomatic Patients undergoing Carotid Artery Stenting (CAS)	MIPS Program

[a] Per CMS Measures Inventory Tool as of 07/19/2020

NQF #	Title	Federal Programs: Finalized or Implemented as of July 19, 2020
1550	Hospital-level risk-standardized complication rate (RSCR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)	Hospital Compare, Hospital Inpatient Quality Reporting, Hospital Value-Based Purchasing
1551	Hospital-level 30-day, all-cause risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)	Hospital Compare, Hospital Inpatient Quality Reporting, Hospital Readmission Reduction Program
2063	Performing cystoscopy at the time of hysterectomy for pelvic organ prolapse to detect lower urinary tract injury	MIPS Program
2558	Hospital 30-Day, All-Cause, Risk-Standardized Mortality Rate (RSMR) Following Coronary Artery Bypass Graft (CABG) Surgery	Hospital Compare, Hospital Inpatient Quality Reporting, Hospital Value-Based Purchasing
2681	Perioperative Temperature Management	MIPS Program
2687	Hospital Visits after Hospital Outpatient Surgery	Hospital Outpatient Quality Reporting

Appendix C: Surgery Standing Committee and NQF Staff

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Appendix D: Measure Specifications

	2687 Hospital Visits after Hospital Outpatient Surgery
Steward	Centers for Medicare & Medicaid Services (CMS)
Description	Facility-level risk-standardized rate of acute, unplanned hospital visits within 7 days of a procedure performed at a hospital outpatient department (HOPD) among Medicare Fee-For-Service (FFS) patients aged 65 years and older. An unplanned hospital visit is defined as an emergency department (ED) visit, observation stay, or unplanned inpatient admission.
Type	Outcome
Data Source	Claims, Enrollment Data Medicare administrative claims and enrollment data No data collection instrument provided Attachment HOPD_Surgery_Measure_Data_Dictionary_v2019a.xlsx
Level	Facility
Setting	Outpatient Services
Numerator Statement	The outcome is all-cause, unplanned hospital visits, defined as 1) an inpatient admission directly after the surgery or 2) an unplanned hospital visit (emergency department [ED] visit, observation stay, or unplanned inpatient admission) occurring after discharge and within 7 days of the surgical procedure.
Numerator Details	Outcome Definition The outcome is all-cause, unplanned hospital visits, defined as 1) an inpatient admission directly after the surgery or 2) an unplanned hospital visit (ED visit, observation stay, or unplanned inpatient admission) occurring after discharge and within 7 days of the surgical procedure. If more than one unplanned hospital visit occurs in the 7 days following the surgical procedure, only the first hospital visit within the outcome timeframe is counted in the outcome. If there are two surgical procedures within a 7-day period, we adjust the follow up period of the first procedure to be the time between the first procedure and the second procedure. The second procedure's follow up period remains 7 days post-procedure. Thus, hospital visit outcomes are assigned to the first procedure if they occur during the time between procedures, while outcomes in the 7 days following the second procedure are assigned to the second procedure. Planned Admission Algorithm For inpatient admissions occurring after Day 1 following surgery, we only include unplanned admissions in the measure outcome. We consider admissions occurring on the day of the surgery (Day 0) and Day 1 post-surgery "unplanned" as the vast majority of these admissions are inpatient admissions directly following surgery. "Planned" admissions are those planned by providers for anticipated medical treatment or procedures that must be provided in the inpatient setting. We do not count these in the outcome because variation in planned admissions does not reflect quality differences. To identify admissions as planned or unplanned we use an algorithm we previously developed for CMS's hospital readmission measures, CMS Planned Readmission Algorithm (PRA) Version 4.0. In brief, the algorithm uses the procedure codes and principal discharge diagnosis code on each hospital claim to identify admissions that are typically planned and may occur after a surgery. A few specific, limited types of care are always considered planned (for example, major organ transplant, rehabilitation, or maintenance chemotherapy). Otherwise, a planned admission is defined as a non-acute admission for a scheduled procedure (for example, total hip replacement or cholecystectomy). Post-discharge admissions for an acute illness or for complications of care are never considered planned. Also, the measure never considers ED visits or observation stays as planned. The most recently published methodology report provides a detailed description of the planned admission algorithm adapted for the surgery measure:

	2687 Hospital Visits after Hospital Outpatient Surgery
	https://www.qualitynet.org/files/5d0d367e764be766b01006a7?filename=HOPD_Surg_MsrUpdtRpt_2018.pdf. The codes that define ED visits and observation stays are in the attached data dictionary, sheet "HOPD_Surgy__ED_Obs_Stay_Def"
Denominator Statement	Outpatient same-day surgeries performed at HOPDs for Medicare FFS patients aged 65 years and older.
Denominator Details	The surgery measure was developed to improve the quality of care delivered to patients undergoing hospital outpatient surgeries. In brief, the surgery measure includes all hospital outpatient departments (HOPDs) that performed qualifying surgeries during the performance period. Further information on the measure development process is available in the Hospital Visits After Hospital Outpatient Surgeries: Measure Technical Report (2014) and 2016 Technical Report Addendum: https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Downloads/Hospital-Visits-after-Hospital-Outpatient-Surgery-Measure.pdf Inclusion Criteria 1. Surgeries and procedures that are substantial and are typically performed as same-day surgeries Rationale: The target cohort is low-to-moderate-risk surgeries that can be safely performed as same-day surgeries and do not typically require an overnight stay or an inpatient admission. In addition, they do not occur in conjunction with a same-day emergency department (ED) visit or observation stay. We define same-day surgeries using the CMS's list of covered ambulatory surgery center (ASC) procedures. The list is comprised of procedures for which the patients are expected to return home the same day as their procedure. We further restrict Medicare's list of covered ASC procedures using the Global Surgical Package (GSP) indicator and include two types of procedures from this list: o Substantive surgeries performed at HOPDs (except eye surgeries) Rationale: Ambulatory procedures include a heterogeneous mix of non-surgical procedures, minor surgeries, and more substantive surgeries. We want to include substantive surgeries but not very low-risk (minor) surgeries or non-surgical procedures, which typically have a high volume and a very low outcome rate. We define substantive procedures using the Medicare Physician Fee Schedule (MPFS) global surgery indicator (GSI) code 090. o Cystoscopy procedures with intervention Rationale: All endoscopy procedures are considered non-surgical procedures based on Medicare coding (GSI code 000). However, we include cystoscopy with intervention because it is a common procedure, often performed for therapeutic intervention by surgical teams, and the outcome rate and causes of hospital visits post-procedure are similar to those for surgeries in the measure cohort. Please refer to the data dictionary "HOPD_Surg_Cohort" to review the list of qualifying same-day surgeries, including cystoscopy procedures with intervention. The data dictionary "HOPD_Surg_Eye_Exclusions" provides the list of eye surgeries that are excluded from the measure cohort. 2. Surgeries on patients aged 65 or over Rationale: Medicare beneficiaries under age 65, typically, are a highly diverse group with a higher burden of disability, and it is therefore difficult to adequately risk adjust for the under 65 population. 3. When multiple procedures occur concurrently, only surgeries that are not performed concurrently with a high-risk procedure are included. Rationale: Occasionally, more than one surgery may be performed and some of these surgeries may be higher-risk procedures. When multiple procedures occur, we only include surgeries that are not performed concurrently with high-risk procedures. Please refer to the data dictionary "HOPD_Surg_High_Risk_Exclusions" tab to review the list of high-risk

	2687 Hospital Visits after Hospital Outpatient Surgery
	procedures. High-risk procedures are identified using the Hospital Outpatient PPS Addendum B. A procedure is considered high-risk if it is flagged as "Inpatient Only" (not paid under OPPS) or "Outpatient Only" (paid under OPPS, but not on the list of ASC-approved procedures). Removal of these procedures aids with alignment of the measure's restriction to only include ASC-covered procedures. 4. Surgeries for patients with continuous enrollment in Medicare Fee-for-Service (FFS) Parts A and B in the 12 months prior to the surgery. Rationale: Patients with full enrollment have all claims available for identifying comorbidities for risk adjustment. 5. Surgeries for patients with continuous enrollment in Medicare Fee-for-Service (FFS) Parts A and B in the 12 months prior to the surgery. Rationale: Patients with full enrollment have all claims available for identifying comorbidities for risk adjustment. Citations 1. Centers for Medicare & Medicaid Services (CMS). Three Day Payment Window. 2013; http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Three_Day_Payment_Window.html
Exclusions	1. Surgeries for patients without continuous enrollment in Medicare FFS Parts A and B in the 7 days after the surgery. 2. Surgeries for patients who have an ED visit on the same day but billed on a separate claim, unless the ED visit has a diagnosis indicative of a complication of care. 3. Surgeries that are billed on the same hospital claim as an emergency department (ED) visit and that occur on the same calendar day, unless the ED visit has a diagnosis indicative of a complication of care. 4. Surgeries that are billed on the same hospital outpatient claim and that occur after the ED visit. 5. Surgeries that are billed on the same outpatient claim as an observation stay.
Exclusion Details	Exclusion Criteria 1. Surgeries for patients without continuous enrollment in Medicare FFS Parts A and B in the 7 days after the surgery. Rationale: We exclude these patients to ensure all patients have full data available for outcome assessment. 2. Surgeries for patients who have an ED visit on the same day but billed on a separate claim, unless the ED visit has a diagnosis indicative of a complication of care. Rationale: It is unclear whether a same-day ED visit occurred before or after an eligible same-day surgery. However, the measure will not exclude surgeries with same-day, separate-claim ED visits if the diagnoses are indicative of a complication of care because we want to continue to capture these outcomes. The ICD-9-CM and ICD-10-CM codes that define complications of care are in the attached Data Dictionary, sheet " HOPD_Surg_ED_Excl_CoC". 3. Surgeries that are billed on the same hospital claim as an emergency department (ED) visit and that occur on the same calendar day, unless the ED visit has a diagnosis indicative of a complication of care. Rationale: In these situations, it is not possible to use claims data to determine whether the surgery was the cause of, subsequent to, or during the ED visit. However, if the ED visit is coded with a diagnosis for a complication, the assumption is that it occurred after the surgery. The ICD-9-CM and ICD-10-CM codes that define complications of care are in the attached Data Dictionary, sheet " HOPD_Surg_ED_Excl_CoC". 4. Surgeries that are billed on the same hospital outpatient claim and that occur after the ED visit.

	2687 Hospital Visits after Hospital Outpatient Surgery
	Rationale: In these situations, we assume that the surgery was subsequent to the ED visit and may not represent a routine surgery. Timing of the ED visits is determined using revenue center dates from the outpatient claim. 5. Surgeries that are billed on the same outpatient claim as an observation stay. Rationale: We do not include these cases in the calculation because the sequence of events is not clear.
Risk Adjustment	Statistical risk model
Stratification	Not applicable. This is not a stratified measure.
Type Score	Ratio better quality = lower score
Algorithm	1. Identify surgeries meeting the inclusion criteria described above in S.7. 2. Exclude procedures meeting any of the exclusion criteria described above in S.8/S.9. 3. Identify a binary flag for an unplanned hospital visit within 7 days of index procedures as described above in S.5. 4. Use patients' historical and index procedure claims data to create risk-adjustment variables. 5. Fit a hierarchical generalized linear model (HGLM) and calculate the ratio of the number of "predicted" hospital visits to the number of "expected" hospital visits for each facility, given its case/procedure mix using the results. This is the risk-standardized hospital visit ratio (RSHVR). The HGLM is adjusted for age, clinical risk factors, and procedure RVU and body system that vary across patient populations, are unrelated to quality, and influence the outcome. Details about the risk-adjustment model can be found in the measure methodology report: Hospital Visits after Hospital Outpatient Surgery Measure Technical Report at https://www.qualitynet.org/files/5d0d3a7e764be766b0104644?filename=2016HOPDSurgeryTechReport.pdf 6. Use statistical bootstrapping to construct a 95% confidence interval estimate for each facility's RSHVR. For more information about the measure methodology, please see the Hospital Visits after Hospital Outpatient Surgery Measure Technical Report posted on the web page provided in data field S.1. 121025| 144732| 141015| 148806
Submission items	5.1 Identified measures: 3357 : Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers 3470 : Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures 2539 : Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy 3366 : Hospital Visits after Urology Ambulatory Surgical Center Procedures 3490 : Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy 1789 : Hospital-Wide All-Cause Unplanned Readmission Measure (HWR) 0697 : Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure 5a.1 Are specs completely harmonized? Yes 5a.2 If not completely harmonized, identify difference, rationale, impact: The measures are harmonized to the extent possible with other CMS claims-based measures. The HOPD Surgery measure is a claims-based measure, therefore any differences in measure specifications create no burden to facilities as the measures are calculated from data produced during the billing process. We identified the following related NQF-endorsed measures: 1. NQF 3357: Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at ASCs (ASC General Surgery) 2. NQF 3470: Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures (ASC Orthopedic) 3. NQF 3366: Hospital Visits after

	2687 Hospital Visits after Hospital Outpatient Surgery
	Urology Ambulatory Surgical Center Procedures (ASC Urology) 4. NQF 3490: Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy (Chemotherapy) 5. NQF 2539: Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy 6. NQF 1789: Hospital-Wide All-Cause Unplanned Readmission Measure (HWR). 7. NQF 0697: Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure The outcome in measures #1-5 are the same as the outcome of CMS's HOPD Surgery measure presented in this re-endorsement application; an unplanned hospital visit is defined as an emergency department (ED) visit, observation stay (for NQF 3357, 3470, 3366, 2539), or unplanned inpatient admission. Hence, these related measures target the same quality domains as the HOPD Surgery measure. The patient cohort is also similar in that the related measures target Medicare Fee-For-Service (FFS) patients aged 65 years and older. For those measures that focus on the same facility (HOPD) as the target, the procedure/clinical cohorts however, differ. For example, the HOPD Surgery measure includes patients undergoing general surgery at an HOPD, but not colonoscopy procedures; the chemotherapy measure includes patients undergoing chemotherapy treatment at an HOPD, but not surgery or colonoscopy. The ASC-related measures have a different target (ASCs instead of HOPDs), and are divided into separate measures for general surgery, orthopedic surgery, and urologic surgery. The HWR measure and HOPD Surgery include overlapping but distinct surgeries (inpatient vs. outpatient) and overlapping but distinct patient outcomes (hospital visits within 7 days vs. readmissions within 30 days). They address a similar patient cohort (Medicare FFS patients 65 years of age and older). NQF 0687 overlaps with the HOPD Surgery measure in terms of target (patients over 65) and has an overlapping outcome. However, NQF 0687 includes all surgeries (in- and out-patient) and is not limited to outpatient surgeries. In addition, the outcomes that are part of NQF 0687 include complications that may result in an ED visit, observation stay, or inpatient admission (such as sepsis, surgical site infection, wound disruption, and urinary tract infection). It also includes mortality as an outcome, which is not included in the HOPD Surgery measure. 5b.1 If competing, why superior or rationale for additive value: Not applicable. None of the measures are competing measures. The measures selected in the drop down are related, but not competing.

Appendix E: Related and Competing Measures

Comparison of NQF #2687, NQF #0697, NQF#1789, NQF #2539, and NQF #3357

2687 Hospital Visits after Hospital Outpatient Surgery
0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure
1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)
2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy
3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

Steward

2687 Hospital Visits after Hospital Outpatient Surgery

The Centers for Medicare & Medicaid Services (CMS)

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

American College of Surgeons

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

Centers for Medicare & Medicaid Services (CMS)

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

Centers for Medicare & Medicaid Services

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

Centers for Medicare & Medicaid Services (CMS)

Description

2687 Hospital Visits after Hospital Outpatient Surgery

Facility-level risk-standardized rate of acute, unplanned hospital visits within 7 days of a procedure performed at a hospital outpatient department (HOPD) among Medicare Fee-For-Service (FFS) patients aged 65 years and older. An unplanned hospital visit is defined as an emergency department (ED) visit, observation stay, or unplanned inpatient admission.

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

This is a hospital based, risk adjusted, case mix adjusted elderly surgery aggregate clinical outcomes measure of adults 65 years of age and older.

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

This measure estimates a hospital-level, risk-standardized readmission rate (RSRR) of unplanned, all-cause readmission within 30 days of discharge from an index admission with an eligible condition or procedure. The measure reports a single summary RSRR, derived from the volume-weighted results of five different models, one for each of the following specialty cohorts based on groups of discharge condition categories or procedure categories: surgery/gynecology, general medicine, cardiorespiratory, cardiovascular, and neurology. The measure also indicates the hospital-level standardized readmission ratios (SRR) for each of these five specialty cohorts. The outcome is defined as unplanned readmission for any cause within 30 days of the discharge date from the index admission

(the admission included in the measure cohort). A specified set of readmissions are planned and do not count in the readmission outcome. CMS annually reports the measure for Medicare fee-for-service (FFS) patients who are 65 years or older and are hospitalized in non-federal short-term acute care hospitals.

For the All-Cause Readmission (ACR) measure version used in the Shared Savings Program (SSP) beginning in 2017, the measure estimates an Accountable Care Organization (ACO) facility-level RSRR of unplanned, all-cause readmission after admission for any eligible condition or procedure within 30 days of hospital discharge. The ACR measure is calculated using the same five specialty cohorts and estimates an ACO-level standardized risk ratio for each. CMS annually reports the measure for patients who are 65 years or older, are enrolled in Medicare FFS, and are ACO assigned beneficiaries.

The updates in this form reflect changes both to the original HWR measure and the ACS measure version. For instances where the two versions differ, we provide additional clarifications below the original description.

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

Facility-level risk-standardized rate of acute, unplanned hospital visits within 7 days of a colonoscopy procedure performed at a hospital outpatient department (HOPD) or ambulatory surgical center (ASC) among Medicare Fee-For-Service (FFS) patients aged 65 years and older. An unplanned hospital visit is defined as an emergency department (ED) visit, observation stay, or unplanned inpatient admission. The measure is calculated separately for ASCs and HOPDs.

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

Facility-level risk-standardized ratio of acute, unplanned hospital visits within 7 days of a general surgery procedure performed at an ambulatory surgical center (ASC) among Medicare Fee-For-Service (FFS) patients aged 65 years and older. An unplanned hospital visit is defined as an emergency department (ED) visit, observation stay, or unplanned inpatient admission.

Type

2687 Hospital Visits after Hospital Outpatient Surgery

Outcome

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

Outcome

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

Outcome

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

Outcome

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

Outcome

Data Source

2687 Hospital Visits after Hospital Outpatient Surgery

Claims, Enrollment Data Medicare administrative claims and enrollment data

No data collection instrument provided Attachment HOPD_Surgery_Measure_Data_Dictionary_v2019a.xlsx

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

Electronic Health Data, Electronic Health Records, Management Data, Other, Paper Medical Records, Registry Data The modeling presented herein is based on ACS NSQIP Data files for the last several years. As a measure, data are collected and reported on an annual basis. Hospitals are not required to participate in ACS NSQIP- they would simply submit their data to the implementing organization or agency, and would receive their assessments in return.

URL No data dictionary

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

Claims Data sources for the Medicare FFS measure:

HWR

1. Medicare Part A claims data for calendar years 2007 and 2008 were combined and then randomly split into two equal subsets (development sample and validation sample). Risk variable selection was done using the development sample, the risk models for each of the five specialty cohorts in the measure were applied to the validation sample and the models' performance was compared. In addition we re-tested the models in Medicare Part A claims data from calendar year 2009 to look for temporal stability in the models' performance. The number of measured entities and index admissions are listed below by specialty cohort.

2. Medicare Enrollment Database (EDB): This database contains Medicare beneficiary demographic, benefit/coverage, and vital status information. This data source was used to obtain information on several inclusion/exclusion indicators such as Medicare status on admission and following discharge from index admission

ACR

1. Medicare Part A claims data for calendar years 2013, 2014, and 2015.

2. Medicare Enrollment Database (EDB).

Reference:

Fleming C., Fisher ES, Chang CH, Bubolz D, Malenda J. Studying outcomes and hospital utilization in the elderly: The advantages of a merged data base for Medicare and Veterans Affairs Hospitals. Medical Care. 1992; 30(5): 377-91.

Available in attached appendix at A.1 Attachment DelAP_4-107f_NQF1789HWR_DataDictionary_Final082819-637263622402629808.xlsx

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

Claims, Other Medicare administrative claims and enrollment data

No data collection instrument provided Attachment Colonoscopy_Measure_Data_Dictionary_v2019a.xlsx

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

Claims, Enrollment Data Medicare administrative claims and enrollment data.

No data collection instrument provided Attachment Copy_of_General_surgery_ASC_code_set_file_033120_ForNQF.XLSX

Level

2687 Hospital Visits after Hospital Outpatient Surgery

Facility

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

Facility

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

Facility

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

Facility

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

Facility

Setting

2687 Hospital Visits after Hospital Outpatient Surgery

Outpatient Services

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

Inpatient/Hospital, Outpatient Services

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

Inpatient/Hospital, Outpatient Services

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

Outpatient Services

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

Outpatient Services

Numerator Statement

2687 Hospital Visits after Hospital Outpatient Surgery

The outcome is all-cause, unplanned hospital visits, defined as 1) an inpatient admission directly after

the surgery or 2) an unplanned hospital visit (emergency department [ED] visit, observation stay, or unplanned inpatient admission) occurring after discharge and within 7 days of the surgical procedure.

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

The outcome of interest is hospital-specific risk-adjusted mortality, a return to the operating room, or any of the following morbidities as defined by American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP): Cardiac Arrest requiring CPR, Myocardial Infarction, Sepsis, Septic Shock, Deep Incisional Surgical Site Infection (SSI), Organ/Space SSI, Wound Disruption, Unplanned Reintubation without prior ventilator dependence, Pneumonia without pre-operative pneumonia, progressive Renal Insufficiency or Acute Renal Failure without pre-operative renal failure or dialysis, or urinary tract infection (UTI) within 30 days of any ACS NSQIP listed (CPT) surgical procedure. The original endorsed measure included venous thromboembolism (VTE) as eligible morbidity events, including deep venous thrombosis requiring therapy and pulmonary embolism.

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

The outcome for both the original HWR and ACR measures is 30-day readmission. We define readmission as an inpatient admission for any cause, except for certain planned readmissions, within 30 days from the date of discharge from an eligible index admission. If a patient has more than one unplanned admission (for any reason) within 30 days after discharge from the index admission, only one is counted as a readmission. The measure looks for a dichotomous yes or no outcome of whether each admitted patient has an unplanned readmission within 30 days. However, if the first readmission after discharge is considered planned, any subsequent unplanned readmission is not counted as an outcome for that index admission because the unplanned readmission could be related to care provided during the intervening planned readmission rather than during the index admission.

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

Unplanned hospital visits within 7 days of a qualifying colonoscopy.

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

The outcome being measured is acute, unplanned hospital visits (ED visit, observation stay, or unplanned inpatient admission) occurring within 7 days of a general surgery procedure performed at an ASC.

Additional details are provided in S.5 Numerator Details.

Numerator Details

2687 Hospital Visits after Hospital Outpatient Surgery

Outcome Definition

The outcome is all-cause, unplanned hospital visits, defined as 1) an inpatient admission directly after the surgery or 2) an unplanned hospital visit (ED visit, observation stay, or unplanned inpatient admission) occurring after discharge and within 7 days of the surgical procedure. If more than one unplanned hospital visit occurs in the 7 days following the surgical procedure, only the first hospital visit within the outcome timeframe is counted in the outcome. If there are two surgical procedures within a 7-day period, we adjust the follow up period of the first procedure to be the time between the first procedure and the second procedure. The second procedure's follow up period remains 7 days post-procedure. Thus, hospital visit outcomes are assigned to the first procedure if they occur

during the time between procedures, while outcomes in the 7 days following the second procedure are assigned to the second procedure.

Planned Admission Algorithm

For inpatient admissions occurring after Day 1 following surgery, we only include unplanned admissions in the measure outcome. We consider admissions occurring on the day of the surgery (Day 0) and Day 1 post-surgery "unplanned" as the vast majority of these admissions are inpatient admissions directly following surgery. "Planned" admissions are those planned by providers for anticipated medical treatment or procedures that must be provided in the inpatient setting. We do not count these in the outcome because variation in planned admissions does not reflect quality differences.

To identify admissions as planned or unplanned we use an algorithm we previously developed for CMS's hospital readmission measures, CMS Planned Readmission Algorithm (PRA) Version 4.0. In brief, the algorithm uses the procedure codes and principal discharge diagnosis code on each hospital claim to identify admissions that are typically planned and may occur after a surgery. A few specific, limited types of care are always considered planned (for example, major organ transplant, rehabilitation, or maintenance chemotherapy). Otherwise, a planned admission is defined as a non-acute admission for a scheduled procedure (for example, total hip replacement or cholecystectomy). Post-discharge admissions for an acute illness or for complications of care are never considered planned.

Also, the measure never considers ED visits or observation stays as planned. The most recently published methodology report provides a detailed description of the planned admission algorithm adapted for the surgery measure: https://www.qualitynet.org/files/5d0d367e764be766b01006a7?filename=HOPD_Surg_MsrUpdtRpt_2018.pdf. The codes that define ED visits and observation stays are in the attached data dictionary, sheet "HOPD_Surgy__ED_Obs_Stay_Def"

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

Mortality- "All cause" death within the 30-day follow-up period: Any death occurring through midnight on the 30th day after the date of the procedure, regardless of cause, in or out of the hospital.

All other outcome fields also defined explicitly in the tradition of ACS NSQIP:

Unplanned reoperation: Patient had an unplanned return to the operating room for a surgical procedure related to either the index or concurrent procedure performed. This return must be within the 30 day postoperative period. The return to the OR may occur at any hospital or surgical facility (i.e. original index hospital or at an outside hospital).

Cardiac Arrest Requiring CPR: The absence of cardiac rhythm or presence of chaotic cardiac rhythm that results in loss of consciousness requiring the initiation of any component of basic and/or advanced cardiac life support. Patients with automatic implantable cardioverter defibrillator (AICD) that fire but the patient has no loss of consciousness should be excluded.

Myocardial Infarction: An acute myocardial infarction occurring within 30 days following surgery as manifested by one of the following three criteria:

a. Documentation of ECG changes indicative of acute MI (one or more of the following):

- ST elevation > 1 mm in two or more contiguous leads
- New left bundle branch

- New q-wave in two of more contiguous leads

b. New elevation in troponin greater than 3 times upper level of the reference range in the setting of suspected myocardial ischemia

c. Physician diagnosis of myocardial infarction.

Sepsis: Sepsis is the systemic response to infection. Report this variable if the patient has TWO OR MORE of the following five clinical signs and symptoms of Systemic Inflammatory Response Syndrome (SIRS):

a. Temp >38 degrees C (100.4 degrees F) or < 36 degrees C (96.8 degrees F)

b. HR >90 bpm

c. RR >20 breaths/min or PaCO2 <32 mmHg(<4.3 kPa)

d. WBC >12,000 cell/mm3, <4000 cells/mm3, or >10% immature (band) forms

e. Anion gap acidosis: this is defined by either:

- [Na + K] – [Cl + HCO3 (or serum CO2)]. If this number is greater than 16, then an anion gap acidosis is present.
- Na – [Cl + HCO3 (or serum CO2)]. If this number is greater than 12, then an anion gap acidosis is present.

AND one of the following:

a. positive blood culture

b. clinical documentation of purulence or positive culture from any site thought to be causative

In addition, a patient with a suspected post-operative clinical condition of infection, or bowel infarction, (which leads to the surgical procedure and meets the criteria for SIRS above), the findings at operation must confirm the diagnosis with one of more of the following:

- Confirmed infarcted bowel requiring resection
- Purulence in the operative site
- Enteric contents in the operative site, or
- Positive intra-operative cultures

Severe Sepsis/Septic Shock: Sepsis is considered severe when it is associated with organ and/or circulatory dysfunction. Report this variable if the patient has sepsis AND documented organ and/or circulatory dysfunction. Examples of organ dysfunction include: oliguria, acute alteration in mental status, acute respiratory distress. Examples of circulatory dysfunction include: hypotension, requirement of inotropic or vasopressor agents. Severe Sepsis/Septic Shock is assigned when it appears to be related to Sepsis and not a Cardiogenic or Hypovolemic etiology.

Deep Incisional SSI: Deep Incision SSI is an infection that occurs within 30 days after the operation and the infection appears to be related to the operation and infection involved deep soft tissues (for example, fascial and muscle layers) of the incision and at least one of the following:

- Purulent drainage from the deep incision but not from the organ/space component of the surgical site.

- A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following signs or symptoms: fever (> 38 C), localized pain, or tenderness, unless site is culture-negative.
- An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination.
- Diagnosis of a deep incision SSI by a surgeon or attending physician.

Organ/Space SSI: is an infection that occurs within 30 days after the operation and the infection appears to be related to the operation and the infection involves any part of the anatomy (for example, organs or spaces), other than the incision, which was opened or manipulated during an operation and at least one of the following:

- Purulent drainage from a drain that is placed through a stab wound into the organ/space.
- Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space.
- An abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination.
- Diagnosis of an organ/space SSI by a surgeon or attending physician.

Wound Disruption: Separation of the layers of a surgical wound, which may be partial or complete, with disruption of the fascia.

Unplanned Intubation for Respiratory/Cardiac Failure: Patient required placement of an endotracheal tube and mechanical or assisted ventilation because of the onset of respiratory or cardiac failure manifested by severe respiratory distress, hypoxia, hypercarbia, or respiratory acidosis. In patients who were intubated for their surgery, unplanned intubation occurs after they have been extubated after surgery. In patients who were not intubated during surgery, intubation at any time after their surgery is considered unplanned.

Pneumonia (without preoperative pneumonia): Enter “Yes” if the patient has pneumonia meeting the definition below. Patients with pneumonia must meet criteria from both Radiology and Signs/Symptoms/Laboratory sections listed as follows:

Radiology:

One definitive chest radiological exam (x-ray or CT)* with at least one of the following:

- New or progressive and persistent infiltrate
- Consolidation or opacity
- Cavitation

*Note: In patients with underlying pulmonary or cardiac disease (e.g. respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease), two or more serial chest radiological exams (x-ray or CT) are required. (Serial radiological exams should be taken no less than 12 hours apart, but not more than 7 days apart. The occurrence should be assigned on the date the patient first met all of the criteria of the definition i.e, if the patient meets all PNA criteria on the day of the first xray, assign this date to the occurrence. Do not assign the date of the occurrence to when the second serial xray was performed).

Signs/Symptoms/Laboratory:

FOR ANY PATIENT, at least one of the following:

- Fever (>380C or >100.40F) with no other recognized cause
- Leukopenia (<4000 WBC/mm3) or leukocytosis(=12,000 WBC/mm3)
- For adults = 70 years old, altered mental status with no other recognized cause

And

At least one of the following:

- 5% Bronchoalveolar lavage (BAL) -obtained cells contain intracellular bacteria on direct microscopic exam (e.g., Gram stain)
- Positive growth in blood culture not related to another source of infection
- Positive growth in culture of pleural fluid
- Positive quantitative culture from minimally contaminated lower respiratory tract (LRT) specimen (e.g. BAL or protected specimen brushing)

OR

At least two of the following:

- New onset of purulent sputum, or change in character of sputum, or increased respiratory secretions, or increased suctioning requirements
- New onset or worsening cough, or dyspnea, or tachypnea
- Rales or rhonchi
- Worsening gas exchange (e.g. O2 desaturations (e.g., PaO2/FiO2 = 240), increased oxygen requirements, or increased ventilator demand)

Progressive Renal Insufficiency (without preoperative renal failure or dialysis): The reduced capacity of the kidney to perform its function as evidenced by a rise in creatinine of >2 mg/dl from preoperative value, but with no requirement for dialysis.

Acute Renal Failure Requiring Dialysis (without preoperative renal failure or dialysis): In a patient who did not require dialysis preoperatively, worsening of renal dysfunction postoperatively requiring hemodialysis, peritoneal dialysis, hemofiltration, hemodiafiltration, or ultrafiltration.

Urinary Tract Infection: Postoperative symptomatic urinary tract infection must meet ONE of the following TWO criteria:

Criterion One. One of the following five:

a. fever (>38 degrees C),
b. urgency,
c. frequency,
d. dysuria,
e. suprapubic tenderness

AND a urine culture of > 100,000 colonies/ml urine with no more than two species of organisms.

OR

Criterion Two. Two of the following five:

a. fever (>38 degrees C),
b. urgency,
c. frequency,
d. dysuria,

e. suprapubic tenderness

AND ANY ONE or MORE of the following seven:

a. Dipstick test positive for leukocyte esterase and/or nitrate,

b. Pyuria (>10 WBCs/mm3 or > 3 WBC/hpf of unspun urine),

c. Organisms seen on Gram stain of unspun urine,

d. Two urine cultures with repeated isolation of the same uropathogen with >100 colonies/ml urine in non-voided specimen,

e. Urine culture with < 100,000 colonies/ml urine of single uropathogen in patient being treated with appropriate antimicrobial therapy,

f. Physician´s diagnosis,

g. Physician institutes appropriate antimicrobial therapy.

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

Outcome definition

The measure counts readmissions to any short-term acute care hospital for any cause within 30 days of the date of discharge from an eligible index admission, excluding planned readmissions as defined below.

Rationale

From a patient perspective, an unplanned readmission from any cause is an adverse event. Outcomes occurring within 30 days of discharge can be influenced by hospital care and the early transition to the non-acute care setting. The 30-day time frame is a clinically meaningful period for hospitals to collaborate with their communities to reduce readmissions. However, planned readmissions are generally not a signal of quality of care. Including planned readmissions in a readmission measure could create a disincentive to provide appropriate care to patients who are scheduled for elective or necessary procedures within 30 days of discharge.

It is important to note that for the HWR measure, a readmission is included as an index admission if it meets all other eligibility criteria. This differs from the publicly reported condition-specific and procedure-specific readmission measures, which do not consider a readmission as a new index admission within the same measure.

Planned Readmission Algorithm (Version 4.0)

The Planned Readmission Algorithm is a set of criteria for classifying readmissions as planned among the general Medicare population using Medicare administrative claims data. The algorithm identifies admissions that are typically planned and may occur within 30 days of discharge from the hospital.

The Planned Readmission Algorithm has three fundamental principles:

1. A few specific, limited types of care are always considered planned (obstetric delivery, transplant surgery, maintenance chemotherapy/radiotherapy/immunotherapy, rehabilitation);

2. Otherwise, a planned readmission is defined as a non-acute readmission for a scheduled procedure; and

3. Admissions for acute illness or for complications of care are never planned.

The algorithm was developed in 2011 as part of the HWR measure. In 2013, CMS applied the algorithm to its other readmission measures.

For more details on the Planned Readmission Algorithm, please see Appendix E of the report titled "2019 All-Cause Hospital-Wide Measure Updates and Specifications Report: Hospital-Wide Readmission"

Wallace Lori, Grady J, Djordjevic Darinka, et al. 2019 All-Cause Hospital Wide Measure Updates and Specifications Report.

https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1219069855841

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

Outcome Definition

The outcome for this measure is all-cause, unplanned hospital visits within 7 days of an outpatient colonoscopy. Hospital visits include ED visits, observation stays, and unplanned inpatient admissions. If more than one unplanned hospital visit occurs, only the first hospital visit within the outcome timeframe is counted in the outcome.

Identification of Planned Admissions

The measure outcome includes any inpatient admission within the first 7 days after the colonoscopy, unless that admission is deemed a "planned" admission as defined by the measure's PAA. The Centers for Medicare & Medicaid Services (CMS) seeks to count only unplanned admissions in the measure outcome, because variation in "planned" admissions does not reflect quality differences. We based the PAA on the CMS PRA Version 4.0_2019, which CMS created for its hospital-wide readmission measure. In brief, the algorithm identifies admissions that are typically planned and may occur after the patient's index event. The algorithm always considers a few specific, limited types of care planned (e.g., major organ transplant, rehabilitation, or maintenance chemotherapy). Otherwise, the algorithm defines a planned admission as a non-acute admission for a scheduled procedure (e.g., total hip replacement or cholecystectomy), and the algorithm never considers admissions for acute illness or for complications of care planned. For example, the algorithm considers hip replacement unplanned if hip fracture (an acute condition) is the discharge diagnosis, but planned if osteoarthritis (a non-acute condition) is the discharge diagnosis. The algorithm considers admissions that include potentially planned procedures with acute diagnoses or that might represent complications of a colonoscopy unplanned and thus counts these admissions in the measure outcome.

For more information about the PAA, please see the Facility 7-day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy Measure 2018 Measure Updates and Specifications Report posted on the web page provided in data field S.1. Also see sheets 'PAA PA1 always planned Px', 'PAA PA2 always planned Dx', 'PAA PA3 post planned Px', and 'PAA PA4 acute Dx' in the attached Data Dictionary for the most up-to-date sets of codes in the algorithm for 'always planned procedures' (PA1), 'always planned diagnoses' (PA2), 'potentially planned procedures' (PA3), and 'acute' diagnoses (PA4).

Definition of ED and Observation Stay

We defined ED visits and observation stays using one of the specified billing codes or revenue center codes identified in Medicare Part B Outpatient hospital claims. The codes that define ED visits and observation stays are in the attached Data Dictionary, sheet "Colons_Outcome_ED_Obs."

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

Outcome Definition

The outcome is unplanned hospital visits, defined as an ED visit, observation stay, or unplanned inpatient admission, occurring within 7 days of the general surgery procedure performed at an ASC identified using Centers for Medicare & Medicaid Services (CMS) Medicare administrative claims data.

Time Period for Data

Numerator time window: 7 days after ASC procedures for unplanned hospital visits.

Denominator: All general surgery ASC procedures performed during the measurement period.

Identification of Planned Admissions

The measure outcome includes hospital visits within the first 7 days following the procedure, unless that inpatient admission is deemed a "planned" admission. We applied CMS's Planned Readmission Algorithm Version 4.0 to identified planned admissions [1]. Planned admissions are defined as those planned by providers for anticipated medical treatment or procedures that must be

provided in the inpatient setting. CMS seeks to count only unplanned admissions in the measure outcome because variation in planned admissions does not reflect quality differences. The algorithm identifies inpatient admissions that are typically planned and may occur after the patient's index general surgery procedure, considering a few specific and limited types of care as "planned" (e.g., major organ transplant, rehabilitation, or maintenance chemotherapy). Otherwise, the algorithm defines a planned admission as a non-acute inpatient admission for a scheduled procedure (e.g., total hip replacement or cholecystectomy), and the algorithm never considers inpatient admissions for acute illness or for complications of care as "planned." The algorithm considers inpatient admissions that include potentially planned procedures with acute diagnoses, or with diagnoses that might represent complications of a surgery, as "unplanned" and thus counts these inpatient admissions in the measure outcome. Details of the planned admission algorithm and codes to identify planned admissions are in the attached Data Dictionary entitled "Planned Admission Algorithm_v2019."

Definition of ED Visits and Observation Stay

The measure defines ED visits and observation stays using one of the specified billing codes or revenue center codes identified in Medicare Part B Outpatient hospital claims.

The codes used to define ED visits and observation stays are in the attached Data Dictionary sheet labeled "ASC Surg Outcome ED Obs."

Citation

1. Horwitz L, Grady J, Cohen D, et al. Development and validation of an algorithm to identify planned readmissions from claims data. Journal of Hospital Medicine. Oct 2015;10(10):670-677.

Denominator Statement

2687 Hospital Visits after Hospital Outpatient Surgery

Outpatient same-day surgeries performed at HOPDs for Medicare FFS patients aged 65 years and older.

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

Patients undergoing any ACS NSQIP listed (CPT) surgical procedure who are 65 years of age or older. (See appendix of roughly 2900 ACS NSQIP eligible CPT codes)

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

The measure includes admissions for Medicare beneficiaries who are 65 years and older and are discharged from all non-federal, acute care inpatient US hospitals (including territories) with a complete claims history for the 12 months prior to admission.

ACR-Specific: The measure at the ACO level includes all relevant admissions for ACO assigned beneficiaries who are 65 and older, and are discharged from all non-Federal short-stay acute care hospitals, including critical access hospitals.

Additional details are provided in S.7 Denominator Details.

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

Colonoscopies performed at hospital outpatient departments (HOPDs) and ambulatory surgical centers (ASCs) for Medicare FFS patients aged 65 years and older.

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

The target population for this measure is Medicare FFS patients aged 65 years and older, undergoing outpatient general surgery procedures in ASCs.

Denominator Details

2687 Hospital Visits after Hospital Outpatient Surgery

The surgery measure was developed to improve the quality of care delivered to patients undergoing hospital outpatient surgeries. In brief, the surgery measure includes all hospital outpatient departments (HOPDs) that performed qualifying surgeries during the performance period.

Further information on the measure development process is available in the Hospital Visits After Hospital Outpatient Surgeries: Measure Technical Report (2014) and 2016 Technical Report Addendum: https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Downloads/Hospital-Visits-after-Hospital-Outpatient-Surgery-Measure.pdf

Inclusion Criteria

1. Surgeries and procedures that are substantial and are typically performed as same-day surgeries

Rationale: The target cohort is low-to-moderate-risk surgeries that can be safely performed as same-day surgeries and do not typically require an overnight stay or an inpatient admission. In addition, they do not occur in conjunction with a same-day emergency department (ED) visit or observation stay. We define same-day surgeries using the CMS's list of covered ambulatory surgery center (ASC) procedures. The list is comprised of procedures for which the patients are expected to return home the same day as their procedure. We further restrict Medicare's list of covered ASC procedures using the Global Surgical Package (GSP) indicator and include two types of procedures from this list:

- Substantive surgeries performed at HOPDs (except eye surgeries)

Rationale: Ambulatory procedures include a heterogeneous mix of non-surgical procedures, minor surgeries, and more substantive surgeries. We want to include

substantive surgeries but not very low-risk (minor) surgeries or non-surgical procedures, which typically have a high volume and a very low outcome rate. We define substantive procedures using the Medicare Physician Fee Schedule (MPFS) global surgery indicator (GSI) code 090.

o Cystoscopy procedures with intervention

Rationale: All endoscopy procedures are considered non-surgical procedures based on Medicare coding (GSI code 000). However, we include cystoscopy with intervention because it is a common procedure, often performed for therapeutic intervention by surgical teams, and the outcome rate and causes of hospital visits post-procedure are similar to those for surgeries in the measure cohort.

Please refer to the data dictionary "HOPD_Surg_Cohort" to review the list of qualifying same-day surgeries, including cystoscopy procedures with intervention. The data dictionary "HOPD_Surg_Eye_Exclusions" provides the list of eye surgeries that are excluded from the measure cohort.

2. Surgeries on patients aged 65 or over

Rationale: Medicare beneficiaries under age 65, typically, are a highly diverse group with a higher burden of disability, and it is therefore difficult to adequately risk adjust for the under 65 population.

3. When multiple procedures occur concurrently, only surgeries that are not performed concurrently with a high-risk procedure are included.

Rationale: Occasionally, more than one surgery may be performed and some of these surgeries may be higher-risk procedures. When multiple procedures occur, we only include surgeries that are not performed concurrently with high-risk procedures. Please refer to the data dictionary "HOPD_Surg_High_Risk_Exclusions" tab to review the list of high-risk procedures. High-risk procedures are identified using the Hospital Outpatient PPS Addendum B. A procedure is considered high-risk if it is flagged as "Inpatient Only" (not paid under OPPS) or "Outpatient Only" (paid under OPPS, but not on the list of ASC-approved procedures). Removal of these procedures aids with alignment of the measure's restriction to only include ASC-covered procedures.

4. Surgeries for patients with continuous enrollment in Medicare Fee-for-Service (FFS) Parts A and B in the 12 months prior to the surgery.

Rationale: Patients with full enrollment have all claims available for identifying comorbidities for risk adjustment.

5. Surgeries for patients with continuous enrollment in Medicare Fee-for-Service (FFS) Parts A and B in the 12 months prior to the surgery.

Rationale: Patients with full enrollment have all claims available for identifying comorbidities for risk adjustment.

Citations

1. Centers for Medicare & Medicaid Services (CMS). Three Day Payment Window. 2013; http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Three_Day_Payment_Window.html

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

Cases are collected so as to match ACS NSQIP inclusion and exclusion criteria, thereby permitting valid application of ACS NSQIP model-based risk adjustment.

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

To be included in the measure cohort, patients must meet the following inclusion criteria:

1. Enrolled in Medicare FFS Part A for the 12 months prior to the date of admission and during the index admission;

2. Aged 65 or older;

3. Discharged alive from a non-federal short-term acute care hospital; and

4. Not transferred to another acute care facility.

ACR- Specific: An additional criterion for the ACO version of this measure is that only hospitalizations for ACO-assigned beneficiaries that meet all of the other criteria listed above are included. The cohort definition is otherwise identical to that of the HWR described below.

The measure first assigns admissions with qualifying Agency for Healthcare Research and Quality (AHRQ) Clinical Classifications Software (CCS) procedure categories to the Surgery/Gynecology Cohort. This cohort includes admissions likely cared for by surgical or gynecological teams.

The measure then sorts admissions into one of the four remaining specialty cohorts based on the AHRQ CCS diagnosis category of the principal discharge diagnosis:

The Cardiorespiratory Cohort includes several condition categories with very high readmission rates such as pneumonia, chronic obstructive pulmonary disease, and heart failure. These admissions are combined into a single cohort because they are often clinically indistinguishable, and patients are often simultaneously treated for several of these diagnoses.

The Cardiovascular Cohort includes condition categories such as acute myocardial infarction that in large hospitals might be cared for by a separate cardiac or cardiovascular team.

The Neurology Cohort includes neurologic condition categories such as stroke that in large hospitals might be cared for by a separate neurology team.

The Medicine Cohort includes all non-surgical patients who were not assigned to any of the other cohorts.

The full list of the specific diagnosis and procedure AHRQ CCS categories used to define the specialty cohorts can be found in the attached data dictionary.

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

Target Population

The measure includes colonoscopies performed at HOPDs and ASCs. The measure calculates a facility-level score for all eligible facilities separately for HOPDs, and ASCs.

The target population is patients aged 65 years and older who have a colonoscopy, to screen for colorectal cancer, biopsy or remove pre-cancerous lesions, or evaluate non-emergent symptoms and signs of disease. We limited the measure cohort to patients who are 65 and older, enrolled in Medicare FFS, and have been enrolled in Part A and Part B Medicare for the 12 months prior to the date of procedure since national data linking risk factors, procedures, and outcomes across care settings are only available for this group.

Eligible colonoscopies were identified using specified Current Procedural Terminology (CPT)/Healthcare Common Procedure Coding System (HCPCS) procedure codes in the Medicare Carrier (Part B Physician) Standard Analytical File (SAF). The CPT and HCPCS

procedure codes that define the cohort are in the attached Data Dictionary, sheet "Colonos_Cohort."

We considered all colonoscopy codes during development of the measure cohort. We did not include in the measure colonoscopy CPT procedure codes that reflected fundamentally higher-risk or different procedures. Those procedures billed with a qualifying colonoscopy procedure code and a high-risk colonoscopy procedure code (see attached Data Dictionary, sheet "Colonos_Excll") were not included in the measure.

Colonoscopy is not possible among patients who have had a prior total colectomy. Any claim for a colonoscopy in a patient with a prior total colectomy is therefore likely to be a coding error. We perform an error check to ensure the measure does not include these patients with a total colectomy recorded in their prior medical history. The CPT and HCPCS procedure codes and International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) and ICD-10-CM codes that define the total colectomy data reliability check are in the attached Data Dictionary, sheet "Colonos_Excl."

Capture of Colonoscopies Affected by the Medicare 3-Day Payment Window Policy:

Colonoscopies performed at HOPDs can be affected by the Medicare 3-day payment window policy. The policy states that outpatient services (including all diagnostic services such as colonoscopy) provided by a hospital or any Part B entity wholly owned or wholly operated by a hospital (such as an HOPD) in the three calendar days preceding the date of a beneficiary's inpatient admission are deemed to be related to the admission [1]. For outpatient colonoscopies affected, the facility claim (for the technical portion of the colonoscopy) is bundled with the inpatient claim, although the Medicare Part B physician claim for professional services rendered is still submitted. This policy has implications for the measure because it may lead to: (1) failure to completely capture outpatient colonoscopies performed at HOPDs; and (2) underreporting of outcomes for colonoscopies performed in the HOPD setting.

To ensure the capture of HOPD colonoscopies, we identify physician claims for colonoscopy in the HOPD setting from Medicare Part B claims, which had an inpatient admission within three days and lacked a corresponding HOPD facility claim. We then attribute the colonoscopies identified as affected by this policy to the appropriate HOPD facility using the facility provider ID from the inpatient claim.

Citations

1. Centers for Medicare & Medicaid Services (CMS). Three Day Payment Window. 2013; http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Three_Day_Payment_Window.html

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

Included patients:

The target population for this measure is Medicare FFS patients aged 65 years and older, undergoing outpatient general surgery procedures in ASCs that are within the scope of general surgery training. Specifically, the cohort of procedures includes the following types of surgeries: abdominal, alimentary tract, breast, skin/soft tissue, wound, and varicose vein. The Medicare FFS population was chosen because of the availability of a national dataset (Medicare claims) that could be used develop, test, and publicly report the measure. We limit the measure to patients who have been enrolled in Medicare FFS Parts

A and B for the 12 months prior to the date of surgery to ensure that we have adequate data for identifying comorbidities for risk adjustment.

Included procedures:

The target group of procedures is surgical procedures that (1) are routinely performed at ASCs, (2) involve risk of post-surgery hospital visits, and (3) are within the scope of general surgery training. The scope of general surgery overlaps with that of other specialties (for example, vascular surgery and, plastic surgery). For this measure, we targeted surgeries that general surgeons are trained to perform with the understanding that other subspecialists may also be performing many of these surgeries at ASCs. Since the type of surgeon performing a particular procedure may vary across ASCs in ways that affect quality, the measure is neutral to surgeons' specialty training. To identify eligible ASC general surgery procedures, we identify the list of procedures from Medicare's most current list of ASC covered procedures, which include procedures for which ASCs can be reimbursed under the ASC payment system. This list of surgeries is publicly available at: https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/ASCPayment/11_Addenda_Updates (download ASC Approved HCPCS Code and Payment Rates, Addendum AA). Surgeries on the ASC list of covered procedures do not involve or require: major or prolonged invasion of body cavities, extensive blood loss, major blood vessels, or care that is either emergent or life-threatening. The ASC list is annually reviewed and updated by Medicare, and includes a transparent public comment submission and review process for the addition and/or removal of procedure codes. Using an existing, defined list of surgeries, rather than defining surgeries de novo, is useful for long-term measure maintenance. Procedures listed in Medicare's list of covered ASC procedures are defined using Healthcare Common Procedure Coding System (HCPCS) and Common Procedural Terminology (CPT®) codes.

Ambulatory procedures include a heterogeneous mix of non-surgical procedures, minor surgeries, and more substantive surgeries. The measure is not intended to include very low-risk surgeries or non-surgical procedures, which typically have a high volume and a very low outcome rate. Therefore, to focus the measure only on the subset of surgeries on Medicare's list of covered ASC procedures that impose a meaningful risk of post-procedure hospital visits, the measure includes only "major" and "minor" procedures, as indicated by the Medicare Physician Fee Schedule global surgery indicator (GSI) values of 090 and 010, respectively. The GSI code reflects the number of post-operative days that are included in a given procedure's global surgical payment and identifies surgical procedures of greater complexity and follow-up care. This list of GSI values is publicly available at: https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched/PFS-Relative-Value-Files.html.

Finally, to identify the subset of general surgery ASC procedures, we reviewed with consultants and Technical Expert Panel (TEP) members the Clinical Classifications Software (CCS) categories of procedures developed by the Agency for Healthcare Research and Quality (AHRQ). We identified and included CCS categories within the scope of general surgery, and only included individual procedures within the CCS categories at the procedure (CPT® code) level if they were within the scope of general surgery practice. We did not include in the measure gastrointestinal endoscopy, endocrine, or vascular procedures, other than varicose vein procedures, because reasons for hospital visits are typically related to patients' underlying comorbidities.

See the attached Data Dictionary, Tab 1 "Asc Surg Cohort" for a complete list of all CPT procedure codes included in the measure cohort.

Exclusions

2687 Hospital Visits after Hospital Outpatient Surgery

1. Surgeries for patients without continuous enrollment in Medicare FFS Parts A and B in the 7 days after the surgery.

2. Surgeries for patients who have an ED visit on the same day but billed on a separate claim, unless the ED visit has a diagnosis indicative of a complication of care.

3. Surgeries that are billed on the same hospital claim as an emergency department (ED) visit and that occur on the same calendar day, unless the ED visit has a diagnosis indicative of a complication of care.

4. Surgeries that are billed on the same hospital outpatient claim and that occur after the ED visit.

5. Surgeries that are billed on the same outpatient claim as an observation stay.

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

Cases must first have ACS NSQIP eligible CPT codes on the submitted list of ~2900 codes. Major/multisystem trauma and transplant surgeries are excluded. Patients who are ASA 6 (brain-death organ donor) are not eligible surgical cases. Surgeries following within 30 d of an index procedure are an outcome (return to OR) and are not eligible to be new index cases. Thus, a patient known to have had a prior surgical operation within 30 days is excluded from having the subsequent surgery considered an index case.

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

Both the original HWR and ACR versions of the measure exclude index admissions for patients:

1. Admitted to Prospective Payment System (PPS)-exempt cancer hospitals;

2. Without at least 30 days post-discharge enrollment in Medicare FFS;

3. Discharged against medical advice;

4. Admitted for primary psychiatric diagnoses;

5. Admitted for rehabilitation; or

6. Admitted for medical treatment of cancer.

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

We established the following exclusion criteria after reviewing the literature, examining existing measures, discussing alternatives with the working group and technical expert panel (TEP) members, reviewing feedback from the national dry run held in July 2015, and public reporting in 2018 and 2019, and annual re-evaluation of the measure in 2017, 2018, and 2019. The goal was to be as inclusive as possible; we excluded only those high-risk procedures and patient groups for which risk adjustment would not be adequate or for which hospital visits were not typically a quality signal. The exclusions, based on clinical rationales, prevent unfair distortion of performance results.

1) Colonoscopies for patients who lack continuous enrollment in Medicare FFS Parts A and B in the 7 days after the procedure.

Rationale: We exclude these patients to ensure full data availability for outcome assessment.

2) Colonoscopies that occur concurrently with high-risk upper gastrointestinal (GI) endoscopy procedures.

Rationale: Patients undergoing concurrent high-risk upper GI endoscopy procedures, such as upper GI endoscopy procedures for the control of bleeding or treatment of esophageal varices, and have a higher risk profile than typical colonoscopy patients. Therefore, these patients have a disproportionally higher risk for the outcome.

3) Colonoscopies for patients with a history of inflammatory bowel disease (IBD) or diagnosis of IBD at time of index colonoscopy or on the subsequent hospital visit outcome claim.

Rationale: We exclude these patients because:

- IBD is a chronic condition; patients with IBD undergo colonoscopy both for surveillance due to increased cancer risk and for evaluation of acute symptoms. IBD is likely to be coded as the primary diagnosis prompting the procedure irrespective of whether the patients are undergoing a screening procedure or a diagnostic procedure in the setting of an acute exacerbation of IBD. Therefore, we may not be able to adequately risk adjust for these patients, as we cannot identify relatively well versus acutely unwell patients among visits coded as IBD.
- Our aim is to capture hospital visits which reflect the quality of care. Admissions for acutely ill IBD patients who are evaluated with an outpatient colonoscopy and are subsequently admitted for medical treatment of an IBD flare do not reflect the quality of the colonoscopy. In our 2010 Medicare 20% FFS Full Development Sample (see the 2014 Facility 7-day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy Measure Technical Report posted at https://www.qualitynet.org/files/5d0d37ae764be766b010196e?filename=ClnscpyMsr_TechReport.pdf for full description of the dataset), more than one-third of IBD patients admitted to the hospital with colonoscopy had a discharge diagnosis of IBD, indicating their admission was for medical treatment of their IBD. We therefore excluded this group so that providers who treat a disproportionate number of IBD patients will not be disadvantaged in the measure.
- A post-index diagnosis of IBD, which represents a very small fraction of cases (less than 0.5% of the cohort) in the measure population, indicates that the condition was likely present at the time of the index colonoscopy but not coded.

4) Colonoscopies for patients with a history of diverticulitis or diagnosis of diverticulitis at time of index colonoscopy or on the subsequent hospital visit outcome claim.

Rationale: We exclude these patients because:

- It is unclear what the health status is of patients coded with a history or current diagnosis of diverticulitis, making it difficult to fully risk adjust for patients' health. Colonoscopies performed on patients with a history or current diagnosis of diverticulitis are likely to be coded as diverticulitis as the primary diagnosis irrespective of whether the patients are undergoing a screening procedure or a diagnostic procedure (i.e., are acutely unwell with active disease). Furthermore, the codes for diverticulitis and diverticulosis may not be consistently used; patients with diverticulosis may be erroneously coded as diverticulitis. Therefore, we may not be able to adequately risk adjust as we cannot identify relatively well versus acutely unwell patients among visits coded as diverticulitis.

- Admissions for acutely ill patients with a history or current diagnosis of diverticulitis who are evaluated with an outpatient colonoscopy and are subsequently admitted for medical treatment of do not reflect the quality of the colonoscopy. In our 2010 Medicare 20% FFS Full Development Sample (see the Facility 7-day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy Measure Technical Report posted on the web page provided in data field S.1) more than one-quarter of patients with a history or current diagnosis of diverticulitis admitted to the hospital post colonoscopy had a discharge diagnosis of diverticulitis, indicating they were admitted for medical treatment of the condition. These admissions are likely unrelated to the quality of the colonoscopy. We therefore excluded this group so that providers who treat a disproportionate number of diverticulitis patients will not be disadvantaged in the measure.
- A post-index diagnosis of diverticulitis, which represents a very small fraction of cases (less than 0.5% of the cohort) in the measure population, indicates that the condition was likely present at the time of the index colonoscopy but not coded.

5) Colonoscopies followed by a subsequent outpatient colonoscopy procedure within 7 days.

Rationale: In these situations, the two colonoscopies are considered part of a single episode of care, for which the subsequent colonoscopy is considered the index procedure.

In addition, for colonoscopies performed at HOPDs, we exclude:

6) Colonoscopies that occur on the same day and at the same hospital as an emergency department (ED) visit that is billed on a different claim than the index colonoscopy, unless the ED visit has a diagnosis indicative of a complication of care.

Rationale: It is unclear whether the colonoscopy or ED visit occurred first. If the ED visit is coded with a diagnosis indicative of a complication of care, the measure assumes the ED visit occurred after the colonoscopy procedure and is counted in the measure. It is unlikely that a patient would experience an ED visit for an acute diagnosis at 1 facility and then travel to another facility for a routine colonoscopy on the same day. Accordingly, ED visits billed on the same day as a colonoscopy but at a different facility are included because they likely represent a routine procedure followed by a complication of care.

7) Colonoscopies that are billed on the same hospital claim as an ED visit and that occur on the same calendar day, unless the ED visit has a diagnosis indicative of a complication of care.

Rationale: In these situations, it is not possible to use claims data to determine whether the colonoscopy was the cause of, subsequent to, or during the ED visit. However, if the ED visit is coded with a diagnosis for a complication, the assumption is that it occurred after the colonoscopy procedure.

8) Colonoscopies that are billed on the same hospital outpatient claim and that occur after the ED visit.

Rationale: In these situations, we assume that the colonoscopy was subsequent to the ED visit and may not represent a routine colonoscopy procedure. Timing of the ED visits is determined using revenue center dates from the outpatient claim.

9) Colonoscopies that are billed on the same hospital outpatient claim as an observation stay.

Rationale: In these situations, it is not possible to use claims data to determine whether the colonoscopy was the cause of, subsequent to, or during the observation stay.

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

The measure excludes surgeries for patients without 7 or more days of continuous enrollment in Medicare FFS Parts A and B after the surgery. The measure excludes these patients to ensure all patients have full data available for outcome assessment.

Exclusion Details

2687 Hospital Visits after Hospital Outpatient Surgery

Exclusion Criteria

1. Surgeries for patients without continuous enrollment in Medicare FFS Parts A and B in the 7 days after the surgery.

Rationale: We exclude these patients to ensure all patients have full data available for outcome assessment.

2. Surgeries for patients who have an ED visit on the same day but billed on a separate claim, unless the ED visit has a diagnosis indicative of a complication of care.

Rationale: It is unclear whether a same-day ED visit occurred before or after an eligible same-day surgery. However, the measure will not exclude surgeries with same-day, separate-claim ED visits if the diagnoses are indicative of a complication of care because we want to continue to capture these outcomes. The ICD-9-CM and ICD-10-CM codes that define complications of care are in the attached Data Dictionary, sheet " HOPD_Surg_ED_Excl_CoC".

3. Surgeries that are billed on the same hospital claim as an emergency department (ED) visit and that occur on the same calendar day, unless the ED visit has a diagnosis indicative of a complication of care.

Rationale: In these situations, it is not possible to use claims data to determine whether the surgery was the cause of, subsequent to, or during the ED visit. However, if the ED visit is coded with a diagnosis for a complication, the assumption is that it occurred after the surgery. The ICD-9-CM and ICD-10-CM codes that define complications of care are in the attached Data Dictionary, sheet " HOPD_Surg_ED_Excl_CoC".

4. Surgeries that are billed on the same hospital outpatient claim and that occur after the ED visit.

Rationale: In these situations, we assume that the surgery was subsequent to the ED visit and may not represent a routine surgery. Timing of the ED visits is determined using revenue center dates from the outpatient claim.

5. Surgeries that are billed on the same outpatient claim as an observation stay.

Rationale: We do not include these cases in the calculation because the sequence of events is not clear.

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

NOT ON ELIGIBLE CPT LIST: Approximately 2900 codes are eligible.

MAJOR TRAUMA: A patient who is admitted to the hospital with acute major or multisystem trauma and has surgery for that trauma is excluded, though any operation performed after the patient has been discharged from that trauma admission can be included. Exclusion of trauma cases does consider magnitude of injuries. If there are multiple severe injuries and the situation is emergent, the case would be excluded. If the patient has minor injuries, they are not excluded. For instance, ground level falls or low-

velocity / low-impact injury mechanism may produce a single bone fracture (single system injury) and would be included. In contrast, a fall from a ladder (or a fall from height) would be excluded due to high-velocity / high-impact mechanism and the resulting injuries would be considered multisystem trauma. Any emergent, major or multisystem trauma case is excluded. These algorithms are communicated to the data collectors via educational tools.

TRANSPLANT: A patient who is admitted to the hospital for a transplant and has a transplant procedure and any additional surgical procedures during the transplant hospitalization will be excluded, tough any operation performed after the patient has been discharged from the transplant stay is eligible for selection.

ASA 6: A patient classified as ASA Class 6 is not eligible for inclusion.

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

Both the original HWR and ACR versions of the measure exclude index admissions for patients:

1. Admitted to PPS-exempt cancer hospitals; identified by the Medicare provider ID

Rationale: These hospitals care for a unique population of patients that cannot reasonably be compared to patients admitted to other hospitals.

2. Without at least 30 days of post-discharge enrollment in Medicare FFS; determined using data captured in the Medicare Enrollment Database (EDB)

Rationale: The 30-day readmission outcome cannot be assessed in this group since claims data are used to determine whether a patient was readmitted.

3. Discharged against medical advice; identified using the discharge disposition indicator in claims data.

Rationale: Providers did not have the opportunity to deliver full care and prepare the patient for discharge.

4. Admitted for primary psychiatric diagnoses

Rationale: Patients admitted for psychiatric treatment are typically cared for in separate psychiatric or rehabilitation centers that are not comparable to short-term acute care hospitals.

5. Admitted for rehabilitation

Rationale: These admissions are not typically to a short-term acute care hospital and are not for acute care.

6. Admitted for medical treatment of cancer

Rationale: These admissions have a different mortality and readmission profile than the rest of the Medicare population, and outcomes for these admissions do not correlate well with outcomes for other admissions. Patients with cancer admitted for other diagnoses or for surgical treatment of their cancer remain in the measure.

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

1) Colonoscopies for patients who lack continuous enrollment in Medicare FFS Parts A and B in the 7 days after the procedure.

Lack of continuous enrollment in Medicare FFS for 7 days after the procedure is determined by patient enrollment status in FFS Parts A and B using the Medicare Enrollment Database. The enrollment indicators must be appropriately marked for the month(s) which fall within 7 days of the procedure date.

2) Colonoscopies that occur concurrently with high-risk upper GI endoscopy procedures.

The list of the CPT codes for the upper GI endoscopy procedures identified as “high-risk” are in attached Data Dictionary, sheet “Colonos_Excl”

3) Colonoscopies for patients with a history of IBD or diagnosis of IBD at time of index colonoscopy or on the subsequent hospital visit outcome claim.

The ICD-9-CM and ICD-10-CM codes that define IBD are in the attached Data Dictionary, sheet “Colonos_Excl.”

4) Colonoscopies for patients with a history of diverticulitis or diagnosis of diverticulitis at time of index colonoscopy or on the subsequent hospital visit outcome claim.

The ICD-9-CM and ICD-10-CM codes that define diverticulitis are in the attached Data Dictionary, sheet “Colonos_Excl.”

5) Colonoscopies followed by a subsequent outpatient colonoscopy procedure within 7 days.

For cases in which a colonoscopy is followed by another colonoscopy within 7 days, the measure will use the subsequent colonoscopy as the index colonoscopy.

The following are in addition to those above, but only for HOPDs:

6) Colonoscopies that occur on the same day and at the same hospital as an ED visit that is billed on a separate claim than the index colonoscopy, unless the ED visit has a diagnosis indicative of a complication of care.

The billing and revenue center codes that define ED visits are in the attached Data Dictionary, sheet “Colonos_Outcome_ED_Obs.” The same facility is defined as having the same CMS Certification Number (CCN). Complications of care codes (shown in tab “Colons_Excl_ED_CoC” include the following AHRQ CCS catgories: AHRQ CCS 257 – Other aftercare; AHRQ CCS 238 – Complications of surgical procedures or medical care; AHRQ CCS 2616 - Adverse effects of medical care; AHRQ CCS 2617 - Adverse effects of medical drugs; and ICD-10-CM G89.18 – Other acute postprocedural pain.

7) Colonoscopies that are billed on the same hospital claim as an ED visit and that occur on the same calendar day, unless the ED visit has a diagnosis indicative of a complication of care.

The billing and revenue center codes that define ED visits are in the attached Data Dictionary, sheet “Colonos_Outcome_ED_Obs.” Complications of care codes (shown in tab “Colons_Excl_ED_CoC” include the following AHRQ CCS catgories: AHRQ CCS 257 – Other aftercare; AHRQ CCS 238 – Complications of surgical procedures or medical care; AHRQ CCS 2616 - Adverse effects of medical care; AHRQ CCS 2617 - Adverse effects of medical drugs; and ICD-10-CM G89.18 – Other acute postprocedural pain.

8) Colonoscopies that are billed on the same hospital outpatient claim and that occur after the ED visit.

The billing and revenue center codes that define ED visits are in the attached Data Dictionary, sheet ““Colonos_Outcome_ED_Obs.”

9) Colonoscopies that are billed on the same hospital outpatient claim as an observation stay.

The billing and revenue center codes that define observation stays are in the attached Data Dictionary, sheet “Colonos_Outcome_ED_Obs.”

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

Lack of 7 or more days of continuous enrollment in Medicare FFS after the ASC surgery is determined by patient enrollment status in FFS Parts A and B using the Medicare enrollment file (unless lack of enrollment was due to death). The procedure must be 7 or more days from the end of the month or the enrollment indicators must be appropriately marked for the month that falls within 7 days of the procedure date (unless disenrollment is due to death), otherwise the procedure is excluded.

Risk Adjustment

2687 Hospital Visits after Hospital Outpatient Surgery

Statistical risk model

121025| 144732| 141015| 148806

121025| 144732| 141015| 148806

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

Statistical risk model

118976| 120600| 138615| 112481| 141364

118976| 120600| 138615| 112481| 141364

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

Statistical risk model

112469| 118210| 135810| 141592| 141973| 146637

112469| 118210| 135810| 141592| 141973| 146637

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

Statistical risk model

121025| 141592| 144732| 141015| 148806| 149320| 150289

121025| 141592| 144732| 141015| 148806| 149320| 150289

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

Statistical risk model

146313| 121025| 148806

146313| 121025| 148806

Stratification

2687 Hospital Visits after Hospital Outpatient Surgery

Not applicable. This is not a stratified measure.

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

The measure is risk adjusted and case mix adjusted.

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

N/A

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

N/A. This measure is not stratified.

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

Not applicable.

Type Score

2687 Hospital Visits after Hospital Outpatient Surgery

Ratio better quality = lower score

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

Ratio better quality = lower score

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

Rate/proportion better quality = lower score

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

Rate/proportion better quality = lower score

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

Ratio better quality = lower score

Algorithm

2687 Hospital Visits after Hospital Outpatient Surgery

1. Identify surgeries meeting the inclusion criteria described above in S.7.

2. Exclude procedures meeting any of the exclusion criteria described above in S.8/S.9.

3. Identify a binary flag for an unplanned hospital visit within 7 days of index procedures as described above in S.5.

4. Use patients' historical and index procedure claims data to create risk-adjustment variables.

5. Fit a hierarchical generalized linear model (HGLM) and calculate the ratio of the number of "predicted" hospital visits to the number of "expected" hospital visits for each facility, given its case/procedure mix using the results. This is the risk-standardized hospital visit ratio (RSHVR). The HGLM is adjusted for age, clinical risk factors, and procedure RVU and body system that vary across patient populations, are unrelated to quality, and influence the outcome. Details about the risk-adjustment model can be found in the measure methodology report: Hospital Visits after Hospital Outpatient Surgery Measure Technical Report at https://www.qualitynet.org/files/5d0d3a7e764be766b0104644?filename=2016HOPDSurgeryTechReport.pdf

6. Use statistical bootstrapping to construct a 95% confidence interval estimate for each facility's RSHVR. For more information about the measure methodology, please see the Hospital Visits after Hospital Outpatient Surgery Measure Technical Report posted on the web page provided in data field S.1. 121025| 144732| 141015| 148806

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

For data collected during the one year time interval at each hospital: (a) O = the number of observed adverse events at the hospital; (b) using parameters from the applicable model derived logistic equation, compute predicted event probabilities for each patient in the

hospital's data set; (c) the sum of these predicted probabilities defines E; (d) compute the hospital's O/E ratio and applicable confidence intervals. 118976| 120600| 138615| 112481| 141364

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

The measure estimates hospital-level 30-day all-cause RSRRs using hierarchical logistic regression models. In brief, the approach simultaneously models data at the patient and hospital levels to account for variance in patient outcomes within and between hospitals (Normand et al., 2007). At the patient level, it models the log-odds of hospital readmission within 30 days of discharge using age, selected clinical covariates, and a hospital-specific effect. At the hospital level, the approach models the hospital-specific effects as arising from a normal distribution. The hospital effect represents the underlying risk of a readmission at the hospital, after accounting for patient risk. The hospital-specific effects are given a distribution to account for the clustering (non-independence) of patients within the same hospital (Normand et al., 2007). If there were no differences among hospitals, then after adjusting for patient risk, the hospital effects should be identical across all hospitals.

Admissions are assigned to one of five mutually exclusive specialty cohort groups consisting of related conditions or procedures. For each specialty cohort group, the SRR is calculated as the ratio of the number of "predicted" readmissions to the number of "expected" readmissions at a given hospital. For each hospital, the numerator of the ratio is the number of readmissions within 30 days, predicted based on the hospital's performance with its observed case mix and service mix, and the denominator is the number of readmissions expected based on the nation's performance with that hospital's case mix and service mix. This approach is analogous to a ratio of "observed" to "expected" used in other types of statistical analyses. It conceptually allows a particular hospital's performance, given its case mix and service mix, to be compared to an average hospital's performance with the same case mix and service mix. Thus, a lower ratio indicates lower-than-expected readmission rates or better quality, while a higher ratio indicates higher-than-expected readmission rates or worse quality.

For each specialty cohort, the "predicted" number of readmissions (the numerator) is calculated by using the coefficients estimated by regressing the risk factors and the hospital-specific effect on the risk of readmission. The estimated hospital-specific effect for each cohort is added to the sum of the estimated regression coefficients multiplied by patient characteristics. The results are log-transformed and summed over all patients attributed to a hospital to calculate a predicted value. The "expected" number of readmissions (the denominator) is obtained in the same manner, but a common effect using all hospitals in our sample is added in place of the hospital-specific effect. The results are log-transformed and summed over all patients attributed to a hospital to calculate an expected value. To assess hospital performance for each reporting period, we re-estimate the model coefficients using the data in that period.

The specialty cohort SRRs are then pooled for each hospital using a volume-weighted geometric mean to create a hospital-wide combined SRR. The combined SRR is multiplied by the national observed readmission rate to produce the RSRR. The statistical modeling approach is described fully in the original methodology report (Horwitz et al., 2012).

ACR-specific: The ACR quality measure was adapted from the HWR quality measure. The unit of analysis was changed from the hospital to the ACO. This was possible because both the HWR and ACR measures assess readmission performance for a population that clusters

patients together (either in hospitals or in ACOs). The goal is to isolate the effects of beneficiary characteristics on the probability that a patient will be readmitted from the effects of being in a specific hospital or ACO. In addition, planned readmissions are excluded for the ACR quality measure in the same way that they are excluded for the HWR measure. The ACR measure is calculated identically to what is described above for the HWR measure.

References:

Horwitz L, Partovian C, Lin Z, et al. Hospital-Wide All-Cause Unplanned Readmission Measure: Final Technical Report. 2012;

https://www.qualitynet.org/dcs/ContentServer?c=Page&pagename=QnetPublic%2FPage%2FQnetTier4&cid=1219069855841

Normand S-LT, Shahian DM. 2007. Statistical and Clinical Aspects of Hospital Outcomes Profiling. Stat Sci 22(2): 206-226. 112469| 118210| 135810| 141592| 141973| 146637

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

The measure is calculated separately for HOPDs and ASCs.

1. Identify colonoscopies meeting the inclusion criteria described above in S.7.

2. Exclude procedures meeting any of the exclusion criteria described above in S.9.

3. Identify and create a binary (0/1) flag for an unplanned hospital visit within 7 days of the colonoscopy described above in Section S.5.

4. Use patients' historical and index procedure claims data to create risk adjustment variables.

5. Fit a hierarchical generalized linear model (HGLM) to produce a ratio of the number of "predicted" hospital visits to the number of "expected" hospital visits for each facility, given its case mix. The HGLM is adjusted for clinical risk factors that vary across patient populations, are unrelated to quality, and influence the outcome.

6. Multiply the ratio estimated in step 3 by the observed national 7-day hospital visit rate to obtain a risk-standardized hospital visit (RSHV) rate for each facility.

7. Use bootstrapping to construct a 95% confidence interval estimate for each facility's RSHV rate.

For more information about the measure methodology, please see the Facility 7-day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy 2018 Measure Updates and Specifications Report posted on the web page provided in data field S.1. 121025| 141592| 144732| 141015| 148806| 149320| 150289

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

The measure uses a two-level hierarchical logistic regression model to estimate ASC-level risk-standardized hospital visit ratios (RSHVRs). This approach accounts for the clustering of patients within ASCs and variation in sample size across ASCs. The RSHVR is calculated as the ratio of the predicted to the expected number of post-surgical unplanned hospital visits among ASC's patients. For each ASC, the numerator of the ratio is the number of hospital visits predicted for the ASC's patients, accounting for its observed rate, the number and complexity of general surgery procedures performed at the ASC, and the case mix. The denominator is the number of hospital visits expected nationally for the ASC's case/procedure mix. To calculate an ASC's predicted-to-expected (P/E)

ratio, the measure uses a two-level hierarchical logistic regression model. The log-odds of the outcome for an index procedure is modeled as a function of the patient demographic, comorbidity, procedure characteristics, and a random ASC-specific intercept. A ratio greater than one indicates that the ASC's patients have more post-surgical visits than expected, compared to an average ASC with similar patient and procedural complexity. A ratio less than one indicates that the ASC's patients have fewer post-surgical visits than expected, compared to an average ASC with similar patient and procedural complexity. This approach is analogous to an observed to- expected ratio, but accounts for within-facility correlation of the observed outcome and sample size differences and accommodates the assumption that underlying differences in quality across ASCs lead to systematic differences in outcomes, and is tailored to and appropriate for a publicly reported outcome measure as articulated in published scientific guidelines [1-3].

Citations

1. Normand S-LT, Shahian DM. Statistical and clinical aspects of hospital outcomes profiling. Statistical Science. 2007;22(2):206-226.

2. Krumholz HM, Brindis RG, Brush JE, et al. Standards for Statistical Models Used for Public Reporting of Health Outcomes An American Heart Association Scientific Statement From the Quality of Care and Outcomes Research Interdisciplinary Writing Group: Cosponsored by the Council on Epidemiology and Prevention and the Stroke Council Endorsed by the American College of Cardiology

Foundation. Circulation. 2006;113(3):456-462.

3. National Quality Forum. Measure Evaluation Criteria and Guidance for Evaluating Measures for Endorsement. 2015;

http://www.qualityforum.org/Measuring_Performance/Submitting_Standards/2015_Measure_Evaluation_Criteria.aspx. Accessed July 26, 2016. 146313| 121025| 148806

Submission items

2687 Hospital Visits after Hospital Outpatient Surgery

5.1 Identified measures: 3357 : Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

3470 : Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

2539 : Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

3366 : Hospital Visits after Urology Ambulatory Surgical Center Procedures

3490 : Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

1789 : Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

0697 : Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: The measures are harmonized to the extent possible with other CMS claims-based measures. The HOPD Surgery measure is a claims-based measure, therefore any differences in measure specifications create no burden to facilities as the measures are calculated from data produced during the billing process. We identified the following related NQF-endorsed measures: 1. NQF 3357: Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at ASCs (ASC General Surgery) 2. NQF 3470: Hospital Visits after

Orthopedic Ambulatory Surgical Center Procedures (ASC Orthopedic) 3. NQF 3366: Hospital Visits after Urology Ambulatory Surgical Center Procedures (ASC Urology) 4. NQF 3490: Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy (Chemotherapy) 5. NQF 2539: Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy 6. NQF 1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR). 7. NQF 0697: Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure The outcome in measures #1-5 are the same as the outcome of CMS's HOPD Surgery measure presented in this re-endorsement application; an unplanned hospital visit is defined as an emergency department (ED) visit, observation stay (for NQF 3357, 3470, 3366, 2539), or unplanned inpatient admission. Hence, these related measures target the same quality domains as the HOPD Surgery measure. The patient cohort is also similar in that the related measures target Medicare Fee-For-Service (FFS) patients aged 65 years and older. For those measures that focus on the same facility (HOPD) as the target, the procedure/clinical cohorts however, differ. For example, the HOPD Surgery measure includes patients undergoing general surgery at an HOPD, but not colonoscopy procedures; the chemotherapy measure includes patients undergoing chemotherapy treatment at an HOPD, but not surgery or colonoscopy. The ASC-related measures have a different target (ASCs instead of HOPDs), and are divided into separate measures for general surgery, orthopedic surgery, and urologic surgery. The HWR measure and HOPD Surgery include overlapping but distinct surgeries (inpatient vs. outpatient) and overlapping but distinct patient outcomes (hospital visits within 7 days vs. readmissions within 30 days). They address a similar patient cohort (Medicare FFS patients 65 years of age and older). NQF 0687 overlaps with the HOPD Surgery measure in terms of target (patients over 65) and has an overlapping outcome. However, NQF 0687 includes all surgeries (in- and out-patient) and is not limited to outpatient surgeries. In addition, the outcomes that are part of NQF 0687 include complications that may result in an ED visit, observation stay, or inpatient admission (such as sepsis, surgical site infection, wound disruption, and urinary tract infection). It also includes mortality as an outcome, which is not included in the HOPD Surgery measure.

5b.1 If competing, why superior or rationale for additive value: Not applicable. None of the measures are competing measures.

The measures selected in the drop down are related, but not competing.

0697 Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

5.1 Identified measures: 0706 : Risk Adjusted Colon Surgery Outcome Measure

0534 : Hospital specific risk-adjusted measure of mortality or one or more major complications within 30 days of a lower extremity bypass (LEB).

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact:

5b.1 If competing, why superior or rationale for additive value: NA - different target populations

1789 Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

5.1 Identified measures: 0695 : Hospital 30-Day Risk-Standardized Readmission Rates following Percutaneous Coronary Intervention (PCI)

0329 : Risk-Adjusted 30-Day All-Cause Readmission Rate

0330 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following heart failure (HF) hospitalization

0505 : Hospital 30-day all-cause risk-standardized readmission rate (RSRR) following acute myocardial infarction (AMI) hospitalization.

0506 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following pneumonia hospitalization

1551 : Hospital-level 30-day risk-standardized readmission rate (RSRR) following elective primary total hip arthroplasty (THA) and/or total knee arthroplasty (TKA)

1768 : Plan All-Cause Readmissions (PCR)

1891 : Hospital 30-day, all-cause, risk-standardized readmission rate (RSRR) following chronic obstructive pulmonary disease (COPD) hospitalization

5a.1 Are specs completely harmonized? No

5a.2 If not completely harmonized, identify difference, rationale, impact: This measure and the National Committee for Quality Assurance (NCQA) Plan All-Cause Readmissions (PCR) Measure #1768 are related measures, but are not competing because they don't have the same measure focus and same target population. In addition, both have been previously harmonized to the extent possible under the guidance of the National Quality Forum Steering Committee in 2011. Each of these measures has different specifications. NCQA's Measure #1768 counts the number of inpatient stays for patients aged 18 and older during a measurement year that were followed by an acute readmission for any diagnosis to any hospital within 30 days. It contrasts this count with a calculation of the predicted probability of an acute readmission. NCQA's measure is intended for quality monitoring and accountability at the health plan level. This measure estimates the risk-standardized rate of unplanned, all-cause readmissions to a hospital or ACO for any eligible condition within 30 days of hospital discharge for patients aged 18 and older. The measure will result in a single summary risk-adjusted readmission rate for conditions or procedures that fall under five specialties: surgery/gynecology, general medicine, cardiorespiratory, cardiovascular, and neurology. This measure is specified for evaluating hospital or ACO performance. However, despite these differences in cohort specifications, both measures under NQF guidance have been harmonized to the extent possible through modifications such as exclusion of planned readmissions. We did not include in our list of related measures any non-outcome (e.g., process) measures with the same target population as our measure. Because this is an outcome measure, clinical coherence of the cohort takes precedence over alignment with related non-outcome measures. Furthermore, non-outcome measures are limited due to broader patient exclusions. This is because they typically only include a specific subset of patients who are eligible for that measure (for example, patients who receive a specific medication or undergo a specific procedure).

5b.1 If competing, why superior or rationale for additive value: N/A

2539 Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

5.1 Identified measures: 0658 : Appropriate Follow-Up Interval for Normal Colonoscopy in Average Risk Patients

3357 : Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

2687 : Hospital Visits after Hospital Outpatient Surgery

3510 : Screening/Surveillance Colonoscopy

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: We identified two colonoscopy-related measures that are currently endorsed by NQF. One (NQF 0658) is a process measure that identifies the percentage of patients aged 50 years to 75 years who received a screening colonoscopy and who had a recommended follow-up interval of at least 10 years for repeat colonoscopy documented in their colonoscopy report. The second measure (NQF 3510) is a cost measure. Both measures are process measures related to screening, and while both measures address colonoscopy, these measures differ from the CMS colonoscopy measure, which is an outcome measure. More information on each of the related colonoscopy measures is provided below. 1. NQF 0034: Colorectal Cancer Screening (electronic clinical quality measure [eCQM]): Identifies the proportion of patients in the recommended age group for colonoscopy screenings (50-75) who have had the procedure. NQF 0034 focuses on colonoscopy screening in patients aged 50-75, therefore the targeted population overlaps with the CMS colonoscopy measure and reflects overall screening guidelines. The CMS colonoscopy outcome measure's purpose is to measure outcomes from colonoscopy procedures in Medicare-aged patients. 2. NQF 3510: Screening/Surveillance Colonoscopy The Screening/Surveillance Colonoscopy cost measure evaluates clinicians' risk-adjusted cost to Medicare for beneficiaries who receive this procedure and includes costs of services that are clinically related to the attributed clinician's role in managing care for 14 days from the "trigger" of the episode. NQF 3510 has the same target population (Medicare beneficiaries) and would capture the physician-controlled costs related to hospital visits identified in the CMS colonoscopy measure. The timeframe for the two measures differs (7 days for the outcome measure vs. 14 days for the cost measure), and the level of measurement differs (facility-level for the outcome measure, and clinician or group level for the cost measure). We also identified two related NQF-endorsed outcome measures: 1. NQF 3357: Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at ASCs (ASC General Surgery), and 2. NQF 2687: Hospital Visits after Hospital Outpatient Surgery (HOPD Surgery). The outcome of both measures is the same as CMS's colonoscopy measure presented in this re-endorsement application; an unplanned hospital visit is defined as an emergency department (ED) visit, observation stay, or unplanned inpatient admission. Hence, these related measures target the same quality domains as the CMS colonoscopy measure. The patient cohort is also somewhat similar in that the related measures target Medicare Fee-For-Service (FFS) patients aged 65 years and older. The cohorts however, have no overlap with the colonoscopy measure, because they include patients undergoing surgical procedures, not colonoscopy. The CMS colonoscopy measure is a claims-based measure, therefore any differences in measure specifications create no burden to facilities as the measures are calculated from data produced during the billing process. In terms of interpretability, the CMS colonoscopy measure is an outcome measure, and therefore is conceptually distinct from the process measure and the cost measure; the cost measure also targets a different level of measurement (provider, not facility). The outcome for the CMS colonoscopy measure is harmonized with the related NQF-endorsed outcome measures for these settings (ASCs/HOPDs), as discussed in section 5a1.

5b.1 If competing, why superior or rationale for additive value: Not applicable. There are no competing measures, only related measures.

3357 Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

5.1 Identified measures: 2539 : Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

2687 : Hospital Visits after Hospital Outpatient Surgery

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: Not applicable. The measures' outcomes are harmonized.

5b.1 If competing, why superior or rationale for additive value: Not applicable. There are no competing measures.

Comparison of NQF #2687, NQF #3366, NQF #3470 and NQF #3490

2687 Hospital Visits after Hospital Outpatient Surgery
3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures
3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures
3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

Steward

2687 Hospital Visits after Hospital Outpatient Surgery

The Centers for Medicare & Medicaid Services (CMS)

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

Centers for Medicare & Medicaid Services (CMS)

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

Centers for Medicare & Medicaid Services (CMS)

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

Centers for Medicare and Medicaid Services (CMS)

Description

2687 Hospital Visits after Hospital Outpatient Surgery

Facility-level risk-standardized rate of acute, unplanned hospital visits within 7 days of a procedure performed at a hospital outpatient department (HOPD) among Medicare Fee-For-Service (FFS) patients aged 65 years and older. An unplanned hospital visit is defined as an emergency department (ED) visit, observation stay, or unplanned inpatient admission.

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

Facility-level risk-standardized rate of acute, unplanned hospital visits within 7 days of a urology procedure performed at an ambulatory surgical center (ASC) among Medicare Fee-For-Service (FFS) patients aged 65 years and older. An unplanned hospital visit is defined as an emergency department (ED) visit, observation stay, or unplanned inpatient admission.

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

Facility-level risk-standardized rate of acute, unplanned hospital visits within 7 days of an orthopedic procedure performed at an ambulatory surgical center (ASC) among Medicare fee-for-service (FFS) patients aged 65 years and older. An unplanned hospital visit is defined as an emergency department (ED) visit, observation stay, or unplanned inpatient admission.

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

The Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy Measure, hereafter referred to as the chemotherapy measure, estimates hospital-level, risk-adjusted rates of inpatient admissions or ED visits for cancer patients =18 years of age for at least one of the following diagnoses—anemia, dehydration, diarrhea, emesis, fever, nausea, neutropenia, pain, pneumonia, or sepsis—within 30 days of hospital-based outpatient chemotherapy treatment. Rates of admission and ED visits are calculated and reported separately.

Type

2687 Hospital Visits after Hospital Outpatient Surgery

Outcome

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

Outcome

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

Outcome

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

Outcome

Data Source

2687 Hospital Visits after Hospital Outpatient Surgery

Claims, Enrollment Data Medicare administrative claims and enrollment data

No data collection instrument provided Attachment HOPD_Surgery_Measure_Data_Dictionary_v2019a.xlsx

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

Claims, Enrollment Data Medicare administrative claims and enrollment data.

No data collection instrument provided Attachment Urology_ASC_Measure_NQF_Data_Dictionary_v1.0-636685738163686742.xlsx

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

Claims Medicare administrative claims and enrollment data

No data collection instrument provided Attachment Orthopedic_ASC_NQF_Data_Dictionary_v1.0-636686635415361721.xlsx

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

Claims, Enrollment Data The numerator (outcome), denominator (cohort), and risk factors for this measure are based on Medicare administrative claims and enrollment data.

No data collection instrument provided Attachment 2018_Chemotherapy_Measure_Data_Dictionary_082218-636771841901551813.xlsx

Level

2687 Hospital Visits after Hospital Outpatient Surgery

Facility

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

Facility

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

Facility

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

Facility

Setting

2687 Hospital Visits after Hospital Outpatient Surgery

Outpatient Services

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

Outpatient Services

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

Outpatient Services

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

Outpatient Services

Numerator Statement

2687 Hospital Visits after Hospital Outpatient Surgery

The outcome is all-cause, unplanned hospital visits, defined as 1) an inpatient admission directly after

the surgery or 2) an unplanned hospital visit (emergency department [ED] visit, observation stay, or unplanned inpatient admission) occurring after discharge and within 7 days of the surgical procedure.

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

The outcome being measured is acute, unplanned hospital visits (ED visit, observation stay, or unplanned inpatient admission) occurring within 7 days of a urology procedure performed at an ASC.

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

The outcome being measured is acute, unplanned hospital visits (ED visit, observation stay, or unplanned inpatient admission) occurring within 7 days of an orthopedic procedure performed at an ASC.

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

This measure involves calculating two mutually exclusive outcomes among cancer patients receiving chemotherapy treatment in a hospital outpatient setting: (1) one or more inpatient admissions for any of the following 10 diagnoses—anemia, dehydration, diarrhea, emesis, fever, nausea, neutropenia, pain, pneumonia, or sepsis—within 30 days of chemotherapy treatment or (2) one or more ED visits for any of the following 10 diagnoses—anemia, dehydration, diarrhea, emesis, fever, nausea, neutropenia, pain, pneumonia, or sepsis—within 30 days of chemotherapy treatment. These 10 conditions are potentially preventable through appropriately managed outpatient care. To be counted as an outcome, the qualifying diagnosis on the admission or ED visit claim must be (1) the principal diagnosis or (2) a secondary diagnosis accompanied by a principal diagnosis of cancer.

Numerator Details

2687 Hospital Visits after Hospital Outpatient Surgery

Outcome Definition

The outcome is all-cause, unplanned hospital visits, defined as 1) an inpatient admission directly after the surgery or 2) an unplanned hospital visit (ED visit, observation stay, or unplanned inpatient admission) occurring after discharge and within 7 days of the surgical procedure. If more than one unplanned hospital visit occurs in the 7 days following the surgical procedure, only the first hospital visit within the outcome timeframe is counted in the outcome. If there are two surgical procedures within a 7-day period, we adjust the follow up period of the first procedure to be the time between the first procedure and the second procedure. The second procedure's follow up period remains 7 days post-procedure. Thus, hospital visit outcomes are assigned to the first procedure if they occur during the time between procedures, while outcomes in the 7 days following the second procedure are assigned to the second procedure.

Planned Admission Algorithm

For inpatient admissions occurring after Day 1 following surgery, we only include unplanned admissions in the measure outcome. We consider admissions occurring on the day of the surgery (Day 0) and Day 1 post-surgery "unplanned" as the vast majority of these admissions are inpatient admissions directly following surgery. "Planned" admissions are those planned by providers for anticipated medical treatment or procedures that must be provided in the inpatient setting. We do not count these in the outcome because variation in planned admissions does not reflect quality differences.

To identify admissions as planned or unplanned we use an algorithm we previously developed for CMS's hospital readmission measures, CMS Planned Readmission Algorithm (PRA) Version 4.0. In brief, the algorithm uses the procedure codes and principal discharge diagnosis code on each hospital claim to identify admissions that are typically planned and may occur after a surgery. A few specific, limited types of care are always considered planned (for example, major organ transplant, rehabilitation, or maintenance chemotherapy). Otherwise, a planned admission is defined as a non-acute admission for a scheduled procedure (for example, total hip replacement or cholecystectomy). Post-discharge admissions for an acute illness or for complications of care are never considered planned.

Also, the measure never considers ED visits or observation stays as planned. The most recently published methodology report provides a detailed description of the planned admission algorithm adapted for the surgery measure: https://www.qualitynet.org/files/5d0d367e764be766b01006a7?filename=HOPD_Surg_MsrUpdtRpt_2018.pdf. The codes that define ED visits and observation stays are in the attached data dictionary, sheet "HOPD_Surgy__ED_Obs_Stay_Def"

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

Outcome Definition

The outcome is unplanned hospital visits, defined as an ED visit, observation stay, or unplanned inpatient admission, occurring within 7 days of the urology procedure performed at an ASC identified using the Centers for Medicare & Medicaid Services (CMS) Medicare administrative claims data. The codes used to identify ED visits and observation stays are in the attached Data Dictionary, sheet "S.5 Numerator-ED Obs Def."

Time Period for Data

Numerator time window: within 7 days of ASC procedure.

Denominator time window: urology ASC procedures performed during the measurement period

Identification of Planned Admissions

The measure outcome includes hospital visits within 7 days following the urology procedure, unless that inpatient admission is deemed a "planned" admission. We used CMS's Planned Readmission Algorithm v4.0 to identify planned admissions [1]. Planned admissions are defined as those planned by providers for anticipated medical treatment or procedures that must be provided in the inpatient setting. CMS seeks to count only unplanned admissions in the measure outcome because variation in planned admissions does not reflect quality differences. The algorithm (see the flowchart in the Data Dictionary, first tab, "S.6 Planned Adm Alg Flowchart") identifies inpatient admissions that are typically planned and may occur after the patients' index urology procedure, considering a few, specific, limited types of care planned (e.g., major organ transplant, rehabilitation, or maintenance chemotherapy). Otherwise, the algorithm defines a planned admission as a non-acute inpatient admission for a scheduled procedure (e.g., total hip replacement or cholecystectomy), and the algorithm never considers inpatient admissions for acute illness or for complications of care planned. The algorithm considers inpatient admissions that include potentially planned procedures with acute diagnoses, or with diagnoses that might represent complications of a urology procedure, as "unplanned" and thus counts these inpatient admissions in the measure outcome.

Details of the planned admission algorithm and International Classification of Diseases, 9th Revision (ICD-9)/ International Classification of Diseases, 10th Revision (ICD-10) codes to identify planned admissions are in the attached Data Dictionary, sheets: (1) "S.5 Planned Adm Alg Overview," (2) "S.5 Planned Adm Alg Flowchart," and (3) "S.5 Planned Adm Alg."

Definition of ED Visits and Observation Stay

The measure defines ED visits and observation stays using one of the specified billing codes or revenue center codes identified in Medicare Part B Outpatient hospital claims.

The codes used to define ED visits and observation stays are in the attached Data Dictionary, sheet "S.5 Numerator-ED Obs Def."

Citations

1. Horwitz L, Grady J, Cohen D, et al. Development and validation of an algorithm to identify planned readmissions from claims data. Journal of Hospital Medicine. Oct 2015; 10(10):670-677.

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

Outcome Definition

The outcome is unplanned hospital visits, defined as an ED visit, observation stay, or unplanned inpatient admission, occurring within 7 days of the orthopedic procedure performed at an ASC identified Medicare administrative claims data. The codes used to identify ED visits and observation stays are in the attached Data Dictionary, sheet "S.5 Numerator-ED Obs Def."

Time Period for Data

Numerator time window: within 7 days of an ASC procedure

Denominator time window: Orthopedic ASC procedures performed during the measurement period

Identification of Planned Admissions

The measure outcome includes hospital visits within 7 days following the surgery, unless that inpatient admission is deemed a "planned" admission, as identified via the adapted Planned Readmission Algorithm v4.0, which the Centers for Medicare & Medicaid Services (CMS) created for its hospital-wide readmission measure [1]. Planned admissions are defined as those planned by providers for anticipated medical treatment or procedures that must be provided in the inpatient setting. CMS seeks to count only unplanned admissions in the measure outcome because variation in planned admissions does not reflect quality differences. The algorithm identifies inpatient admissions that are typically planned and may occur after the patient's index event, considering few, specific, limited types of care planned (e.g., major organ transplant, rehabilitation, or maintenance chemotherapy). Otherwise, the algorithm defines a planned admission as a non-acute inpatient admission for a scheduled procedure (e.g., total hip replacement or cholecystectomy). The algorithm never considers inpatient admissions for acute illness or for complications of care planned. The algorithm considers inpatient admissions that include potentially planned procedures with acute diagnoses or that might represent complications of a surgery unplanned and thus counts these inpatient admissions in the measure outcome.

Details of the planned admission algorithm and International Classification of Diseases, 9th Revision (ICD-9)/ international Classification of Diseases, 10th Revision (ICD-10) codes to identify planned admissions are in the attached Data Dictionary, sheets: (1) "S.5 Planned Adm Alg Overview," (2) "S.5 Planned Adm Alg Flowchart," and (3) "S.5 Planned Adm Alg."

Definition of ED Visits and Observation Stay

The measure defines ED visits and observation stays using one of the specified billing codes or revenue center codes identified in Medicare Part B Outpatient hospital claims.

The codes used to define ED visits and observation stays are in the attached Data Dictionary, sheet "S.5 Numerator-ED Obs Def."

Citations

1. Horwitz L, Grady J, Cohen D, et al. Development and validation of an algorithm to identify planned readmissions from claims data. Journal of Hospital Medicine. Oct 2015; 10(10):670-677.

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

The chemotherapy measure is a risk-adjusted outcome measure and does not have a traditional numerator like a process measure; thus we use this field to define the measured outcomes of interest as this measure separately reports hospital rates of two outcomes: (1) inpatient admission and (2) ED visits.

Outcome Definition

The chemotherapy measure has two reported outcomes. The outcomes for this measure are:

(1) one or more inpatient admissions for any of the following 10 diagnoses—anemia, dehydration, diarrhea, emesis, fever, nausea, neutropenia, pain, pneumonia, or sepsis—within 30 days of chemotherapy treatment, and (2) one or more ED visits without an

admission, for one of the 10 following diagnoses—anemia, dehydration, diarrhea, emesis, fever, nausea, neutropenia, pain, pneumonia, or sepsis—within 30 days of receiving hospital-based outpatient chemotherapy treatment for cancer. These 10 conditions are potentially preventable through appropriately managed outpatient care.

Outcome Identification and Counting

Outcomes are identified using Medicare Part A Inpatient and Part B Outpatient hospital claims. The qualifying diagnosis on the admission or ED visit claim must be (1) the principal diagnosis or (2) a secondary diagnosis accompanied by a principal diagnosis of cancer. The ICD-9 and ICD-10-CM codes that identify these diagnoses are in the 2018 Chemotherapy Measure_Data Dictionary on sheets "S.6 Numerator-Anemia," "S.6 Numerator-Dehydration," "S.6 Numerator-Diarrhea," "S.6 Numerator-Emesis," "S.6 Numerator-Fever," "S.6 Numerator-Nausea," "S.6 Numerator-Neutropenia," "S.6 Numerator-Pain," "S.6 Numerator-Pneumonia," and "S.6 Numerator-Sepsis." The ICD-9 codes were used during development and testing of the measure; the Data Dictionary also includes the mapping from these ICD-9 codes to ICD-10 codes.

Inpatient admissions that are considered always planned do not qualify for the measure. Planned admissions are defined as those planned by providers for anticipated medical treatment or procedures that must be provided in the inpatient setting. The measure counts only unplanned admissions in the measure outcome because variation in planned admissions does not reflect quality differences. For the chemotherapy measure, inpatient hospital admissions with the following AHRQ CCS procedures or diagnoses are considered always planned and do not qualify for the measure:

Procedures

- 64 – Bone marrow transplant
- 105 – Kidney transplant
- 176 – Other organ transplantation (other than bone marrow corneal or kidney)

Diagnoses

- 45 – Maintenance chemotherapy; radiotherapy
- 254 – Rehabilitation care; fitting of prostheses; and adjustment of devices

Outcomes are counted separately for the inpatient admission and ED visit categories; a patient can only qualify for an outcome in either category, but not both. Patients who experience both an inpatient admission and an ED visit during the performance period are counted towards the inpatient admission outcome. Among those with no qualifying inpatient admissions, qualifying ED visits are counted. As a result, the rates can be viewed as additive to provide a comprehensive performance estimate of quality of care following hospital-based outpatient chemotherapy treatment. The rates are calculated separately because the severity and cost of an inpatient admission is different from that of an ED visit, but both adverse events are important signals of quality and represent important outcomes of care.

Outcome Time Frame

The measure limits the outcome time frame to the 30 days following the date of each chemotherapy treatment (including the day of treatment) in an outpatient setting for four reasons. First, existing literature suggests the vast majority of adverse events occur within 30 days after treatment [1, 2, 3, 4], indicating that a 30-day period is a reasonable timeframe to observe the side effects of treatment. Second, we observed in our own data

that the highest rates of hospital visits occur within 30 days after chemotherapy treatment. Third, restricting the time period ensures that patients' experiences are attributed to the hospitals that provided their recent treatment while accounting for variations in duration between outpatient treatments. Fourth, relating the time frame to a specific chemotherapy administration supports the idea that the admission stems from the management of side effects of treatment and ongoing care, rather than progression of the disease or other unrelated events.

Citations

1. Aprile, G., F.E. Pisa, A. Follador, L. Foltran, F. De Pauli, M. Mazzer, S. Lutrino, C.S. Sacco, M. Mansutti, and G. Fasola. "Unplanned Presentations of Cancer Outpatients: A Retrospective Cohort Study." Supportive Care in Cancer, vol. 21, no. 2, 2013, pp. 397–404.

2. Foltran, L., G. Aprile, F.E. Pisa, P. Ermacora, N. Pella, E. Iaiza, E. Poletto, S.E. Lutrino, M. Mazzer, M. Giovannoni, G.G. Cardellino, F. Puglisi, and G. Fasola. "Risk of Unplanned Visits for Colorectal Cancer Outpatients Receiving Chemotherapy: A Case-Crossover Study." Supportive Care in Cancer, vol. 22, no. 9, 2014, pp. 2527–2533.

3. McKenzie, H., L. Hayes, K. White, K. Cox, J. Fethney, M. Boughton, and J. Dunn. "Chemotherapy Outpatients' Unplanned Presentations to Hospital: A Retrospective Study." Supportive Care in Cancer, vol. 19, no. 7, 2011, pp. 963–969.

4. Oatley, M., M. Fry, and L. Mullen. "A Cross-Sectional Study of the Clinical Characteristics of Cancer Patients Presenting to One Tertiary Referral Emergency Department." International Emergency Nursing, vol. 24, 2016, pp. 35 – 38.

Denominator Statement

2687 Hospital Visits after Hospital Outpatient Surgery

Outpatient same-day surgeries performed at HOPDs for Medicare FFS patients aged 65 years and older.

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

The target population for this measure is Medicare FFS patients age 65 years and older, who have undergone a urology procedure in ASCs.

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

The target population for this measure is Medicare FFS patients aged 65 years and older who have undergone an orthopedic procedure at an ASC.

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

The measure cohort includes Medicare Fee-for-Service (FFS) patients, aged 18 years and older at the start of the performance period, with a diagnosis of any cancer (except leukemia), who received at least one outpatient chemotherapy treatment at the reporting hospital during the performance period.

Denominator Details

2687 Hospital Visits after Hospital Outpatient Surgery

The surgery measure was developed to improve the quality of care delivered to patients undergoing hospital outpatient surgeries. In brief, the surgery measure includes all hospital outpatient departments (HOPDs) that performed qualifying surgeries during the performance period.

Further information on the measure development process is available in the Hospital Visits After Hospital Outpatient Surgeries: Measure Technical Report (2014) and 2016 Technical Report Addendum: https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/Downloads/Hospital-Visits-after-Hospital-Outpatient-Surgery-Measure.pdf

Inclusion Criteria

1. Surgeries and procedures that are substantial and are typically performed as same-day surgeries

Rationale: The target cohort is low-to-moderate-risk surgeries that can be safely performed as same-day surgeries and do not typically require an overnight stay or an inpatient admission. In addition, they do not occur in conjunction with a same-day emergency department (ED) visit or observation stay. We define same-day surgeries using the CMS's list of covered ambulatory surgery center (ASC) procedures. The list is comprised of procedures for which the patients are expected to return home the same day as their procedure. We further restrict Medicare's list of covered ASC procedures using the Global Surgical Package (GSP) indicator and include two types of procedures from this list:

- Substantive surgeries performed at HOPDs (except eye surgeries)

Rationale: Ambulatory procedures include a heterogeneous mix of non-surgical procedures, minor surgeries, and more substantive surgeries. We want to include substantive surgeries but not very low-risk (minor) surgeries or non-surgical procedures, which typically have a high volume and a very low outcome rate. We define substantive procedures using the Medicare Physician Fee Schedule (MPFS) global surgery indicator (GSI) code 090.

- Cystoscopy procedures with intervention

Rationale: All endoscopy procedures are considered non-surgical procedures based on Medicare coding (GSI code 000). However, we include cystoscopy with intervention because it is a common procedure, often performed for therapeutic intervention by surgical teams, and the outcome rate and causes of hospital visits post-procedure are similar to those for surgeries in the measure cohort.

Please refer to the data dictionary "HOPD_Surg_Cohort" to review the list of qualifying same-day surgeries, including cystoscopy procedures with intervention. The data dictionary "HOPD_Surg_Eye_Exclusions" provides the list of eye surgeries that are excluded from the measure cohort.

2. Surgeries on patients aged 65 or over

Rationale: Medicare beneficiaries under age 65, typically, are a highly diverse group with a higher burden of disability, and it is therefore difficult to adequately risk adjust for the under 65 population.

3. When multiple procedures occur concurrently, only surgeries that are not performed concurrently with a high-risk procedure are included.

Rationale: Occasionally, more than one surgery may be performed and some of these surgeries may be higher-risk procedures. When multiple procedures occur, we only include surgeries that are not performed concurrently with high-risk procedures. Please refer to the data dictionary "HOPD_Surg_High_Risk_Exclusions" tab to review the list of high-risk procedures. High-risk procedures are identified using the Hospital Outpatient PPS Addendum B. A procedure is considered high-risk if it is flagged as "Inpatient Only" (not paid under OPPS) or "Outpatient Only" (paid under OPPS, but not on the list of ASC-

approved procedures). Removal of these procedures aids with alignment of the measure's restriction to only include ASC-covered procedures.

4. Surgeries for patients with continuous enrollment in Medicare Fee-for-Service (FFS) Parts A and B in the 12 months prior to the surgery.

Rationale: Patients with full enrollment have all claims available for identifying comorbidities for risk adjustment.

5. Surgeries for patients with continuous enrollment in Medicare Fee-for-Service (FFS) Parts A and B in the 12 months prior to the surgery.

Rationale: Patients with full enrollment have all claims available for identifying comorbidities for risk adjustment.

Citations

1. Centers for Medicare & Medicaid Services (CMS). Three Day Payment Window. 2013; http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Three_Day_Payment_Window.html

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

Target Population

The target population is Medicare FFS patients aged 65 years and older who are undergoing outpatient urology procedures performed at ASCs. We limit the measure to patients who have been enrolled in Medicare FFS Parts A and B for the 12 months prior to the date of the urology procedure to ensure that we have adequate data for identifying comorbidities for risk adjustment.

To identify eligible ASC urology procedures, we first identified a list of procedures from Medicare's 2015 ASC list of covered procedures, which includes procedures for which ASCs can be reimbursed under the ASC payment system. This list of surgeries is publicly available at: https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalOutpatientPPS/Hospital-Outpatient-Regulations-and-Notices-Items/CMS-1589-FC.html (refer to Addendum AA on the website).

Surgeries on the ASC list of covered procedures do not involve or require major or prolonged invasion of body cavities, extensive blood loss, major blood vessels, or care that is either emergent or life-threatening. The ASC list is publicly available, is annually reviewed and updated by Medicare, and includes a transparent public comment submission and review process for addition and/or removal of procedure codes. Using an existing, defined list of surgeries, rather than defining surgeries de novo, is useful for long-term measure maintenance. Procedures listed in Medicare's list of covered ASC procedures are defined using Healthcare Common Procedure Coding System (HCPCS) and Common Procedural Terminology (CPT®) codes.

Ambulatory procedures include a heterogeneous mix of non-surgical procedures, minor surgeries, and more substantive surgeries. The measure is not intended to include very low-risk (minor) surgeries or non-surgical procedures. We, therefore, further limited the list of covered ASC procedures to "major" and "minor" procedures defined using Medicare's Global Surgical Package [1]. Specifically, we identified "major" and "minor" surgeries using the global surgery indicator (GSI) values of 090 and 010, respectively, which correspond to the number of post-operative days included in Medicare's global surgery payment for the procedure. However, we also included cystoscopy with intervention, which has the GSI value of 000, since this is a common procedure, often performed for

therapeutic intervention by surgical teams, and has an outcome rate similar to other procedures in the urology measure cohort.

Finally, to initially define the urology cohort, we used the Clinical Classifications Software (CCS) developed by the Agency for Healthcare Research and Quality (AHRQ). The CCS is a tool for clustering procedures into clinically meaningful categories using CPT® codes by operation site. We included all procedures defined by the CCS as "operations on the urinary system" and "operations on the male genital organs" and retained all of those typically performed by urologists. Examples of urology procedures include removal of prostate gland, cystoscopy, and fragmenting of kidney stones. The coding list for the body systems is available at: http://www.hcup-us.ahrq.gov/toolssoftware/ccs/AppendixDMultiPR.txt.

The codes used to define the procedures in the urology cohort are in the attached Data Dictionary, sheet "S.7 Codes Used to Define Cohort."

Citations

1. Department of Health and Human Services, Centers for Medicare and Medicaid Services. Global surgery fact sheet 2017. https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/GloballSurgery-ICN907166.pdf. Accessed June 7.

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

Target Population

The target population is Medicare FFS patients aged 65 years and older undergoing orthopedic procedures performed at ASCs. We limit the measure to patients who have been enrolled in Medicare FFS Parts A and B for the 12 months prior to the date of surgery to ensure that we have adequate data for identifying comorbidities for risk adjustment.

To identify eligible outpatient orthopedic surgeries, we first identified a list of procedures from Medicare's 2013 ASC list of covered procedures, which includes procedures for which ASCs can be reimbursed under the ASC payment system. This list of surgeries is publicly available at: https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalOutpatientPPS/Hospital-Outpatient-Regulations-and-Notices-Items/CMS-1589-FC.html (refer to Addendum AA on the website). Surgeries on the ASC list of covered procedures do not involve or require major or prolonged invasion of body cavities, extensive blood loss, major blood vessels, or care that is either emergent or life-threatening. The ASC list is publicly available, is annually reviewed and updated by Medicare, and includes a transparent public comment submission and review process for addition and/or removal of procedure codes. Using an existing, defined list of surgeries, rather than defining surgeries de novo, is useful for long-term measure maintenance. Procedures listed in Medicare's list of covered ASC procedures are defined using Healthcare Common Procedure Coding System (HCPCS) and Common Procedural Terminology (CPT) codes.

Ambulatory surgeries include a heterogeneous mix of non-surgical procedures, minor surgeries, and more substantive surgeries. The measure is not intended to include very low-risk (minor) surgeries or non-surgical procedures. Therefore, we further limited the list of covered ASC procedures to "major" and "minor" procedures defined using Medicare's Global Surgical Package [1]. Specifically, we identified "major" and "minor" surgeries using the global surgery indicator (GSI) values of 090 and 010, respectively, which correspond to the number of post-operative days included in Medicare's global surgery payment for the

procedure. The measure does not include minor/non-surgical procedures identified using the GSI code 000.

Finally, to initially define the orthopedic procedures cohort, we used the Clinical Classifications Software (CCS) developed by the Agency for Healthcare Research and Quality (AHRQ). The CCS is a tool for clustering procedures into clinically meaningful categories using CPT codes by operation site. We included all procedures defined by the CCS as "operations on the musculoskeletal system" and retained all of those typically performed by orthopedic surgeons. Examples of orthopedic procedures include treatment of toe deformities, arthroscopic knee procedures, therapeutic procedures on muscles, tendons, joints, and bones, and treatment of fractures. The coding list for the body systems is available at: http://www.hcup-us.ahrq.gov/toolssoftware/ccs/AppendixDMultiPR.txt.

The codes used to define the orthopedic procedures are in the attached Data Dictionary, sheet "S.7 Codes Used to Define Cohort."

Citations

1. Department of Health and Human Services, Centers for Medicare & Medicaid Services. Global surgery fact sheet. Available at: https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/GloballSurgery-ICN907166.pdf. Accessed June 14, 2017.

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

The target population is Medicare Fee-for-Service (FFS) patients aged 18 and older with a diagnosis of cancer receiving chemotherapy treatment in a hospital outpatient setting at any point during the measurement year.

The measure uses the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9) and ICD-10 codes that identify cancer diagnoses. The measure identifies chemotherapy treatment using ICD-9 and ICD-10 procedure and encounter codes; and Current Procedural Terminology (CPT®)/Healthcare Common Procedure Coding System (HCPCS) procedure and medication procedure codes.

Code sets used for cohort identification are attached in the 2018 Chemotherapy Measure_Data Dictionary on sheets "S.9 Denominator-Cancer," "S.9 Denominator-Chemo Procedure," "S.9 Denominator – Chemo Encounter," and "S.9 Denominator – Chemo Medicine".

Exclusions

2687 Hospital Visits after Hospital Outpatient Surgery

1. Surgeries for patients without continuous enrollment in Medicare FFS Parts A and B in the 7 days after the surgery.

2. Surgeries for patients who have an ED visit on the same day but billed on a separate claim, unless the ED visit has a diagnosis indicative of a complication of care.

3. Surgeries that are billed on the same hospital claim as an emergency department (ED) visit and that occur on the same calendar day, unless the ED visit has a diagnosis indicative of a complication of care.

4. Surgeries that are billed on the same hospital outpatient claim and that occur after the ED visit.

5. Surgeries that are billed on the same outpatient claim as an observation stay.

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

The measure excludes surgeries for patients without 7 or more days of continuous enrollment in Medicare FFS Parts A and B after the urology procedure. The measure excludes these patients to ensure all patients have full data available for outcome assessment.

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

The measure excludes surgeries for patients without 7 or more days of continuous enrollment in Medicare FFS Parts A and B after the surgery. The measure excludes these patients to ensure all patients have full data available for outcome assessment.

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

The measure excludes the following patients from the cohort:

1) Patients with a diagnosis of leukemia at any time during the performance period.

2) Patients who were not enrolled in Medicare FFS Parts A and B in the year prior to the any outpatient chemotherapy treatment during the performance period.

3) Patients who were not enrolled in Medicare FFS Parts A and B for the 30 days following any chemotherapy treatment.

4) Cases in which patients receive chemotherapy to treat conditions other than cancer. Note that this is a case-level exclusion; as long as the patient has additional cases that meet inclusion criteria, they will remain in the cohort.

Exclusion Details

2687 Hospital Visits after Hospital Outpatient Surgery

Exclusion Criteria

1. Surgeries for patients without continuous enrollment in Medicare FFS Parts A and B in the 7 days after the surgery.

Rationale: We exclude these patients to ensure all patients have full data available for outcome assessment.

2. Surgeries for patients who have an ED visit on the same day but billed on a separate claim, unless the ED visit has a diagnosis indicative of a complication of care.

Rationale: It is unclear whether a same-day ED visit occurred before or after an eligible same-day surgery. However, the measure will not exclude surgeries with same-day, separate-claim ED visits if the diagnoses are indicative of a complication of care because we want to continue to capture these outcomes. The ICD-9-CM and ICD-10-CM codes that define complications of care are in the attached Data Dictionary, sheet " HOPD_Surg_ED_Excl_CoC".

3. Surgeries that are billed on the same hospital claim as an emergency department (ED) visit and that occur on the same calendar day, unless the ED visit has a diagnosis indicative of a complication of care.

Rationale: In these situations, it is not possible to use claims data to determine whether the surgery was the cause of, subsequent to, or during the ED visit. However, if the ED visit is coded with a diagnosis for a complication, the assumption is that it occurred after the

surgery. The ICD-9-CM and ICD-10-CM codes that define complications of care are in the attached Data Dictionary, sheet " HOPD_Surg_ED_Excl_CoC".

4. Surgeries that are billed on the same hospital outpatient claim and that occur after the ED visit.

Rationale: In these situations, we assume that the surgery was subsequent to the ED visit and may not represent a routine surgery. Timing of the ED visits is determined using revenue center dates from the outpatient claim.

5. Surgeries that are billed on the same outpatient claim as an observation stay.

Rationale: We do not include these cases in the calculation because the sequence of events is not clear.

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

Lack of 7 or more days of continuous enrollment in Medicare FFS after the ASC surgery is determined by patient enrollment status in FFS Parts A and B using the Medicare Enrollment file (unless lack of enrollment was due to death). The procedure must be 7 or more days from the end of the month or the enrollment indicators must be appropriately marked for the month that falls within 7 days of the procedure date (unless disenrollment is due to death); otherwise, the procedure is excluded.

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

Lack of 7 or more days of continuous enrollment in Medicare FFS after the ASC surgery is determined by patient enrollment status in FFS Parts A and B using the Medicare Enrollment Database (unless lack of enrollment was due to death). The procedure must be 7 or more days from the end of the month or the enrollment indicators must be appropriately marked for the month that falls within 7 days of the procedure date (unless disenrollment is due to death); otherwise, the procedure is excluded.

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

1) Patients with a diagnosis of leukemia at any time during the performance period – exclusions are identified using the codes listed in the 2018 Chemotherapy Measure Data Dictionary on sheet "S.11 Denominator Exclusion – Leukemia." If a patient has a claim with any of the diagnosis codes within the code set, at any point during the performance period, they are excluded from the cohort.

Rationale: Patients with leukemia are excluded due to the high toxicity of treatment and recurrence of disease so that admissions do not reflect poorly managed outpatient care for this population. Patients with leukemia have an expected admission rate due to relapse, so including leukemia patients in the cohort could be conceptualized as a planned admission, which does not align with the intent of the measure.

2) Patients who were not enrolled in Medicare FFS Parts A and B in the year prior to any outpatient chemotherapy treatment during the performance period. The Medicare Enrollment database is used to determine if a patient was enrolled in Medicare FFS Parts A and B in the year prior to the first outpatient chemotherapy treatment during the performance period.

Rationale: We exclude these patients to ensure complete patient diagnosis data for the risk-adjustment models, which use the year prior to the chemotherapy treatment during the period to identify comorbidities.

3) Patients who do not have at least one outpatient chemotherapy treatment followed by continuous enrollment in Medicare FFS Parts A and B in the 30 days after the procedure. The Medicare Enrollment database is used to determine if a patient was enrolled in Medicare FFS Parts A and B in the 30-days after a qualifying outpatient chemotherapy treatment during the performance period.

Rationale: We exclude these patients to ensure full data availability for outcome assessment.

4) Cases in which patients receive chemotherapy to treat conditions other than cancer. If a case includes a chemotherapy procedure code from the "S.11 Denominator Exclusion – ChemoNonCancer" code set, a diagnosis code from the "S.11 Denominator Exclusion - AutoImmuneDiags" code set, and no cancer diagnosis from the "S.9 Denominator-Cancer" code set in any position on the claim, the case is excluded from the cohort. Note that this is a case-level exclusion; as long as the patient has additional cases that meet inclusion criteria, they will remain in the cohort.

Rationale: We exclude these patients because cases where chemotherapy is administered for non-cancer conditions, such as treatment of auto-immune diseases, is not aligned with the measure's intent. The measure is intended to assess the quality of care provided to cancer patients receiving outpatient chemotherapy.

Risk Adjustment

2687 Hospital Visits after Hospital Outpatient Surgery

Statistical risk model

121025| 144732| 141015| 148806

121025| 144732| 141015| 148806

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

Statistical risk model

146313| 121025| 141015| 135548| 114481| 148806

146313| 121025| 141015| 135548| 114481| 148806

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

Statistical risk model

141015| 146313| 135548| 114481| 121025| 148806

141015| 146313| 135548| 114481| 121025| 148806

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

Statistical risk model

144249

144249

Stratification

2687 Hospital Visits after Hospital Outpatient Surgery

Not applicable. This is not a stratified measure.

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

N/A.

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

Not applicable

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

Not applicable. This measure is not stratified.

Type Score

2687 Hospital Visits after Hospital Outpatient Surgery

Ratio better quality = lower score

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

Rate/proportion better quality = lower score

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

Rate/proportion better quality = lower score

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

Rate/proportion better quality = lower score

Algorithm

2687 Hospital Visits after Hospital Outpatient Surgery

1. Identify surgeries meeting the inclusion criteria described above in S.7.

2. Exclude procedures meeting any of the exclusion criteria described above in S.8/S.9.

3. Identify a binary flag for an unplanned hospital visit within 7 days of index procedures as described above in S.5.

4. Use patients' historical and index procedure claims data to create risk-adjustment variables.

5. Fit a hierarchical generalized linear model (HGLM) and calculate the ratio of the number of "predicted" hospital visits to the number of "expected" hospital visits for each facility, given its case/procedure mix using the results. This is the risk-standardized hospital visit ratio (RSHVR). The HGLM is adjusted for age, clinical risk factors, and procedure RVU and body system that vary across patient populations, are unrelated to quality, and influence the outcome. Details about the risk-adjustment model can be found in the measure methodology report: Hospital Visits after Hospital Outpatient Surgery Measure Technical Report at https://www.qualitynet.org/files/5d0d3a7e764be766b0104644?filename=2016HOPDSurgeryTechReport.pdf

6. Use statistical bootstrapping to construct a 95% confidence interval estimate for each facility's RSHVR. For more information about the measure methodology, please see the Hospital Visits after Hospital Outpatient Surgery Measure Technical Report posted on the web page provided in data field S.1. 121025| 144732| 141015| 148806

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

The measure uses a two-level hierarchical logistic regression model to estimate ASC-level risk-standardized hospital visit rates (RSHVRs). This approach accounts for the clustering of patients within ASCs and variation in sample size across ASCs. The RSHVR is calculated as

the ratio of the predicted to the expected number of post-surgical unplanned hospital visits among an ASC's patients, multiplied by the national observed rate of unplanned hospital visits. For each ASC, the numerator of the ratio is the number of hospital visits predicted for the ASC's patients, accounting for its observed rate, the number and complexity of urology procedures performed at the ASC, and the case mix. The denominator is the number of hospital visits expected nationally for the ASC's case/procedure mix. To calculate an ASC's predicted-to-expected (P/E) ratio, the measure uses a two-level hierarchical logistic regression model (see Appendix C). The log-odds of the outcome for an index procedure is modeled as a function of the patient demographic, comorbidity, procedure characteristics, and a random ASC-specific intercept. A ratio greater than one indicates that the ASC's patients have more visits than expected, compared to an average ASC with similar patient and procedural complexity. A ratio less than one indicates that the ASC's patients have fewer post-surgical visits than expected, compared to an average ASC with similar patient and procedural complexity. An ASC's P/E ratio is then multiplied by the overall national rate of unplanned hospital visits to calculate the ASC-level RSHVR. This approach is analogous to an observed-to-expected ratio, but accounts for within-facility correlation of the observed outcome and sample size differences and accommodates the assumption that underlying differences in quality across ASCs lead to systematic differences in outcomes, and is tailored to and appropriate for a publicly reported outcome measure as articulated in published scientific guidelines [1-3].

Please see Appendix C of the measure's technical report for details.The measure's technical report can be found at https://www.qualitynet.org/dcs/ContentServer?cid=1228776662386&pagename=QnetPublic%2FPage%2FQnetTier3&%20c=Page

Citations

1. Normand S-LT, Shahian DM. Statistical and clinical aspects of hospital outcomes profiling. Statistical Science. 2007; 22(2):206-226.

2. Krumholz HM, Brindis RG, Brush JE, et al. Standards for statistical models used for public reporting of health outcomes: An American Heart Association scientific statement from the Quality of Care and Outcomes Research Interdisciplinary Writing Group: cosponsored by the Council on Epidemiology and Prevention and the Stroke Council endorsed by the American College of Cardiology Foundation. Circulation. 2006; 113(3):456-462.

3. National Quality Forum. Measure evaluation criteria and guidance for evaluating measures for endorsement. 2015. Available at: http://www.qualityforum.org/Measuring_Performance/Submitting_Standards/2015_Measure_Evaluation_Criteria.aspx. Accessed June 7, 2017. 146313| 121025| 141015| 135548| 114481| 148806

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

The measure uses a two-level hierarchical logistic regression model to estimate ASC-level risk-standardized hospital visit rates (RSHVRs). This approach accounts for the clustering of patients within ASCs and variation in sample size across ASCs The RSHVR is calculated as the ratio of the predicted to the expected number of post-surgical unplanned hospital visits among an ASC's patients, multiplied by the national observed rate of unplanned hospital visits. For each ASC, the numerator of the ratio is the number of hospital visits predicted for the ASC's patients, accounting for its observed rate, the number and complexity of orthopedic procedures performed at the ASC, and the case mix. The

denominator is the number of hospital visits expected nationally for the ASC's case/procedure mix. As noted above, to calculate an ASC's predicted-to-expected (P/E) ratio, the measure uses a two-level hierarchical logistic regression model (see Appendix C). The log-odds of the outcome for an index procedure is modeled as a function of the patient demographics, comorbidities, procedure characteristics, and a random ASC-specific intercept. A ratio greater than one indicates that the ASC's patients have more post-surgical hospital visits than expected, compared to an average ASC with similar patient and procedural complexity. A ratio less than one indicates that the ASC's patients have fewer post-surgical hospital visits than expected, compared to an average ASC with similar patient and procedural complexity. An ASC's P/E ratio is then multiplied by the overall national rate of unplanned hospital visits to calculate the ASC-level RSHVR. This approach is analogous to an observed-to-expected ratio, but accounts for within-facility correlation of the observed outcome and sample size differences, accommodates the assumption that underlying differences in quality across ASCs lead to systematic differences in outcomes, and is tailored to and appropriate for a publicly reported outcome measure as articulated in published scientific guidelines [1-3].

Please see Appendix C of the technical report for details. The measure's technical report can be found at https://www.qualitynet.org/dcs/ContentServer?cid=1228776661160&pagename=QnetPublic%2FPage%2FQnetTier3&%20c=Page.

Citations

1. Normand S-LT, Shahian DM. Statistical and clinical aspects of hospital outcomes profiling. Statistical Science. 2007; 22(2):206-226.

2. Krumholz HM, Brindis RG, Brush JE, et al. Standards for statistical models used for public reporting of health outcomes: An American Heart Association scientific statement from the Quality of Care and Outcomes Research Interdisciplinary Writing Group: cosponsored by the Council on Epidemiology and Prevention and the Stroke Council endorsed by the American College of Cardiology Foundation. Circulation. 2006; 113(3):456-462.

3. National Quality Forum. Measure evaluation criteria and guidance for evaluating measures for endorsement. 2015. Available at: http://www.qualityforum.org/Measuring_Performance/Submitting_Standards/2015_Measure_Evaluation_Criteria.aspx. Accessed June 7, 2017. 141015| 146313| 135548| 114481| 121025| 148806

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

Calculation of the Observed Rate

Denominator

Steps to Identify Cohort

Step 1: Identify all Medicare Fee-for-Service (FFS) patients age 18 and older with a diagnosis of cancer receiving chemotherapy treatment in a hospital outpatient setting during the performance period.

Step 2: Remove all patients with a diagnosis of leukemia at any time during the performance period.

Step 3: Remove all chemotherapy cases that are not preceded by 12 months of Medicare FFS Parts A and B.

Step 4: Remove all chemotherapy cases that are not followed by continuous enrollment in Medicare FFS Parts A and B in the 30 days after the treatment.

Step 5: Remove all cases in which patients receive chemotherapy to treat a qualifying autoimmune condition, rather than to treat cancer. Note that this is a case-level exclusion; as long as the patient has additional cases that meet inclusion criteria, they will remain in the cohort.

Step 6: Identify the unique number of patient-level provider ID/Facility ID combinations for the remaining cases.

Step 7: The remaining unique patients the measure denominator (cohort) at each facility.

Numerator

Steps to Identify Qualifying Inpatient Hospital Admissions and ED Visits

Step 1: Identify the first qualifying outpatient chemotherapy administration for each patient in each facility. [Note: a patient may be included at multiple facilities.]

Step 2: Determine whether that outpatient chemotherapy treatment was followed by either an inpatient hospital admission or ED visit within 30 days with either:

- A primary diagnosis of anemia, dehydration, diarrhea, emesis, fever, nausea, neutropenia, pain, pneumonia, or sepsis, or
- A primary diagnosis of cancer and a secondary diagnosis of anemia, dehydration, diarrhea, emesis, fever, nausea, neutropenia, pain, pneumonia, or sepsis

Step 3: Remove any qualifying inpatient admissions with an “always planned" diagnosis or procedure.

Step 4: If a patient had both a qualifying inpatient admission and an ED visit within 30 days, select the inpatient admission.

Step 5. If a patient multiple qualifying inpatient admissions, select the first one.

Step 6. Sum the number of patients in the cohort with an inpatient admission. This is the numerator for the inpatient admissions outcome.

Step 7. Sum the number of patients in the cohort who had an ED visit, but no inpatient admission. This is the numerator for the ED visit outcome.

Calculation of the Observed Performance Rate

Calculate the inpatient admissions observed rate by dividing the number of patients with an inpatient hospital admission by the total number of patients in the cohort for a given facility.

Calculate the ED visits observed rate by dividing the number of patients with an ED visit by the total number of patients in the cohort for a given facility.

Calculation of the Predicted and Expected Rates

The measure’s two-level hierarchical logistic regression model accounts for the clustering of patients within hospitals and variation in sample size. The measure calculates the hospital-specific risk-adjusted rate as the ratio of a hospital’s “predicted” number of outcomes to “expected” number of outcomes multiplied by the national observed outcome rate.

- Predicted Rate: The measure estimates the predicted number of outcomes for each hospital using the same patient mix, but an estimated hospital-specific intercept. It calculates the predicted number of outcomes for each hospital by summing the predicted probabilities for all patients in the hospital. The measure calculates the predicted

probability for each patient through the hierarchical model, which applies the estimated regression coefficients to the observed patient characteristics and adds the hospital-specific intercept.

- Expected Rate: This rate estimates the expected number of outcomes for each hospital using the hospital's patient mix and the average hospital-specific intercept (that is, the average intercept among all hospitals in the sample). Operationally, the measure obtains the expected number of outcomes for each hospital by summing the expected probabilities of outcomes for all patients treated at the hospital. It calculates the expected probability of outcomes for each patient via the hierarchical model, which applies the estimated regression coefficients to the observed patient characteristics and adds the average of the hospital-specific intercept.

If a hospital's ratio of predicted to expected outcomes is less than 1, it indicates that the hospital is performing better than expected given its case mix. If a hospital's ratio of predicted to expected outcomes is greater than 1, it indicates that the hospital is performing worse than expected given its case mix. The risk factors included in the Inpatient Admission and ED Visit models are listed below.

Inpatient Admission Model Variables

The patient-level risk-adjustment variables are:

1. Age (continuous)
2. Sex (male)
3. Number of Outpatient Chemotherapy Treatments
4. Receipt of Concurrent Radiotherapy
5. Respiratory Disorder
6. Renal Disease
7. Diabetes
8. Other Injuries
9. Metabolic Disorder
10. Gastrointestinal Disorder
11. Psychiatric Disorder
12. Neurological Conditions
13. Cardiovascular Disease
14. Breast Cancer
15. Digestive Cancer
16. Respiratory Cancer
17. Lymphoma
18. Prostate Cancer
19. Secondary Cancer of Lymph Nodes
20. Secondary Cancer of Solid Tumors
21. Other Cancer

ED Visits Model Variables

The patient-level risk-adjustment variables are:

1. Age (years above 18, continuous)

2. Sex (male)

3. Number of Outpatient Chemotherapy Treatments

4. Receipt of Concurrent Radiotherapy

5. Respiratory Disorder

6. Other Injuries

7. Gastrointestinal Disorder

8. Psychiatric Disorder

9. Neurological Conditions

10. Cardiovascular Disease

11. Breast Cancer

12. Digestive Cancer

13. Respiratory Cancer

14. Secondary Cancer of Lymph Nodes

15. Secondary Cancer of Solid Tumors

16. Other Cancer

Calculation of the Risk-Adjusted Rates

The risk-standardized admissions rate (RSAR) is calculated as the ratio of the number of "predicted" qualifying inpatient admissions to the number of "expected" qualifying inpatient admissions multiplied by the national observed qualifying inpatient admission rate. Similarly, the risk-standardized ED visits rate (RSEDR) is calculated as the ratio of the number of "predicted" qualifying ED visits to the number of "expected" qualifying ED visits multiplied by the national observed qualifying ED visit rate.

For each rate, this approach is analogous to a ratio of "observed" to "expected" outcomes used in other types of statistical analyses. It conceptually allows for a comparison of a particular facility's performance given its case mix to an average facility's performance with the same case mix. Thus, a predicted/expected ratio of less than one indicates a lower-than-expected visit rate (or better quality), and a ratio of greater than one indicates a higher-than-expected visit rate (or worse quality). 144249

Submission items

2687 Hospital Visits after Hospital Outpatient Surgery

5.1 Identified measures: 3357 : Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

3470 : Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

2539 : Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

3366 : Hospital Visits after Urology Ambulatory Surgical Center Procedures

3490 : Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

1789 : Hospital-Wide All-Cause Unplanned Readmission Measure (HWR)

0697 : Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: The measures are harmonized to the extent possible with other CMS claims-based measures. The HOPD

Surgery measure is a claims-based measure, therefore any differences in measure specifications create no burden to facilities as the measures are calculated from data produced during the billing process. We identified the following related NQF-endorsed measures: 1. NQF 3357: Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at ASCs (ASC General Surgery) 2. NQF 3470: Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures (ASC Orthopedic) 3. NQF 3366: Hospital Visits after Urology Ambulatory Surgical Center Procedures (ASC Urology) 4. NQF 3490: Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy (Chemotherapy) 5. NQF 2539: Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy 6. NQF 1789: Hospital-Wide All-Cause Unplanned Readmission Measure (HWR). 7. NQF 0697: Risk Adjusted Case Mix Adjusted Elderly Surgery Outcomes Measure The outcome in measures #1-5 are the same as the outcome of CMS's HOPD Surgery measure presented in this re-endorsement application; an unplanned hospital visit is defined as an emergency department (ED) visit, observation stay (for NQF 3357, 3470, 3366, 2539), or unplanned inpatient admission. Hence, these related measures target the same quality domains as the HOPD Surgery measure. The patient cohort is also similar in that the related measures target Medicare Fee-For-Service (FFS) patients aged 65 years and older. For those measures that focus on the same facility (HOPD) as the target, the procedure/clinical cohorts however, differ. For example, the HOPD Surgery measure includes patients undergoing general surgery at an HOPD, but not colonoscopy procedures; the chemotherapy measure includes patients undergoing chemotherapy treatment at an HOPD, but not surgery or colonoscopy. The ASC-related measures have a different target (ASCs instead of HOPDs), and are divided into separate measures for general surgery, orthopedic surgery, and urologic surgery. The HWR measure and HOPD Surgery include overlapping but distinct surgeries (inpatient vs. outpatient) and overlapping but distinct patient outcomes (hospital visits within 7 days vs. readmissions within 30 days). They address a similar patient cohort (Medicare FFS patients 65 years of age and older). NQF 0687 overlaps with the HOPD Surgery measure in terms of target (patients over 65) and has an overlapping outcome. However, NQF 0687 includes all surgeries (in- and out-patient) and is not limited to outpatient surgeries. In addition, the outcomes that are part of NQF 0687 include complications that may result in an ED visit, observation stay, or inpatient admission (such as sepsis, surgical site infection, wound disruption, and urinary tract infection). It also includes mortality as an outcome, which is not included in the HOPD Surgery measure.

5b.1 If competing, why superior or rationale for additive value: Not applicable. None of the measures are competing measures.

The measures selected in the drop down are related, but not competing.

3366 Hospital Visits after Urology Ambulatory Surgical Center Procedures

5.1 Identified measures: 2539 : Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

2687 : Hospital Visits after Hospital Outpatient Surgery

3357 : Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: Not applicable; the measures' outcomes are harmonized.

5b.1 If competing, why superior or rationale for additive value: Not applicable; there are no competing measures.

3470 Hospital Visits after Orthopedic Ambulatory Surgical Center Procedures

5.1 Identified measures: 2539 : Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy

2687 : Hospital Visits after Hospital Outpatient Surgery

3357 : Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers

5a.1 Are specs completely harmonized? Yes

5a.2 If not completely harmonized, identify difference, rationale, impact: Not applicable; the measures' outcomes are harmonized. NQF #3357: Facility-level 7-day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers: Does not contain any orthopedic measures, so it is related (same setting and outcome) but not competing (procedures/cohort do not overlap) NQF #2687: Hospital Visits after Hospital Outpatient Surgery: Related because it contains orthopedic procedures (along with other outpatient surgeries) but not competing because it addresses care in a different setting (HOPD rather than ASC). NQF #2539: Facility 7-Day Risk-Standardized Hospital Visit Rate after Outpatient Colonoscopy: Related because this addresses the same outcome (hospital visits) and setting (ASCs for one of the two versions of this measure) but not competing because the procedures/cohort do not overlap. Hospital Visits after ASC Urology Procedures: Same outcome and setting, but non-overlapping procedures/cohort.

5b.1 If competing, why superior or rationale for additive value: Not applicable; the measures are not competing.

3490 Admission and Emergency Department (ED) Visits for Patients Receiving Outpatient Chemotherapy

5.1 Identified measures: 0383 : Oncology: Plan of Care for Pain – Medical Oncology and Radiation Oncology (paired with 0384)

0384e : Oncology: Medical and Radiation - Pain Intensity Quantified

1628 : Patients with Advanced Cancer Screened for Pain at Outpatient Visits

5a.1 Are specs completely harmonized? No

5a.2 If not completely harmonized, identify difference, rationale, impact: We identified three related NQF-endorsed measures. All three measures (NQF 0383, NQF 0384e, and NQF 1628) focus on cancer patients receiving outpatient chemotherapy; however, there are some key differences in measure scope and measure type. Measure scope: Each of the three related measures (NQF 0383, NQF 0384e, and NQF 1628) narrowly focuses on pain management and/or fatigue/anemia. The proposed measure does not target a specific symptom, but rather assesses the overall management of 10 important symptoms and complications that were more frequently cited in literature as reasons for ED visits and inpatient admissions following outpatient chemotherapy. Measure type: The three related measures (NQF 0383, NQF 0384e, and NQF 1628) are all process measures encouraging the use of screening and care plans to improve care. The proposed measure is an outcome measure not encouraging or measuring specific processes to detect and treat these conditions, but rather assessing the outcomes of the care being provided. The three process measures, which are not risk-adjusted, support the intent of the measure by

reinforcing that those providing outpatient care should screen for and manage symptoms such as pain.

5b.1 If competing, why superior or rationale for additive value: Not applicable.

Appendix F: Pre-Evaluation Comments

Comments received as of June 19, 2020.

Topic	Commenter	Comment
2687 Hospital Visits after Hospital Outpatient Surgery	Submitted by Federation of American Hospitals.	The Federation of American Hospitals (FAH) appreciates the opportunity to comment on this measure prior to the Standing Committee's evaluation. The FAH remains concerned with the risk adjustment approach to determine whether inclusion of social risk factors. The FAH believes that the risk adjustment approach should not consider the identification and testing of social risk factors as supplementary to clinical risk factors. This approach was identified as a concern by the NQF Disparities Standing Committee and developers must begin to include these factors within the testing of the model rather than the approach of "adding on" factors after the model is developed. This type of analysis would assist facilities and others in understanding how their inclusion could impact the model and provide additional information for groups examining this issue such as the NQF and Office of the Assistant Secretary for Planning and Evaluation. As a result, the FAH believes that this measure lacks sufficient information on the potential impact these social risk variables have on the risk adjustment model.

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