

**2023 Measure Updates and Specifications Report
Ambulatory Surgical Center Quality Reporting Program**

**Facility 7-Day Risk-Standardized Visits After General Surgery
Procedures Performed at Ambulatory Surgical Centers – Version 3.0**
**Hospital Visits after Orthopedic Procedures Performed at Ambulatory
Surgical Centers – Version 5.0**
**Hospital Visits after Urology Ambulatory Surgical Center Procedures –
Version 5.0**
**Facility 7-Day Risk-Standardized Visits Within 7 Days After Outpatient
Colonoscopy Procedure in Ambulatory Surgical Centers – Version 9.0**

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1. HOW TO USE THIS REPORT

This report describes CMS updates made in 2023 to the following measures: Facility 7-Day Risk-Standardized Visits After General Surgery Procedures Performed at Ambulatory Surgical Centers (henceforth referred to as the general surgery measure), Hospital Visits after Orthopedic Procedures Performed at Ambulatory Surgical Centers (henceforth referred to as the orthopedic measure), Hospital Visits after Urology Ambulatory Surgical Center Procedures (henceforth referred to as the urology measure), and Facility 7-Day Risk-Standardized Visits Within 7 Days After Outpatient Colonoscopy Procedure in Ambulatory Surgical Centers (henceforth referred to as the colonoscopy measure) during annual reevaluation. The report provides background information about the measures and describes the updates made since the 2022 Measure Updates and Specifications Report (general surgery, orthopedic, urology, and colonoscopy measures) was released. It also summarizes the score results for the nation's ambulatory surgery centers (ASCs) for the 2023 reporting year. Summarized updates to these measures from prior years can be found in [Appendices B through E](#).

Specifically, in addition to this section, the report includes the following sections:

- **Section 2 – Background and Overview of Measure Methodology**
 - Background
 - Overview of methodology
 - Cohort – inclusions and exclusions
 - Outcomes
 - Planned admission algorithm (PAA)
 - Risk-adjustment variables
 - Data sources
 - Measure score calculation
 - Categorizing facility performance
- **Section 3 – Detailed Discussion of General Surgery Measure**
 - Background and rationale for measure updates
 - Updates to measure code sets
 - PAA updates
- **Section 4 – Summary of General Surgery Measure Performance**
 - Final cohort
 - Model parameters and performance
 - ASC measure score performance
- **Section 5 – Detailed Discussion of Orthopedic Measure**
 - Background and rationale for measure updates
 - Updates to measure code sets
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- **Section 6 – Summary of Orthopedic Measure Performance**

- Final cohort
- Model parameters and performance
- ASC measure score performance
- **Section 7 – Detailed Discussion of Urology Measure**
 - Background and rationale for measure updates
 - Update to measure code sets
 - PAA updates
- **Section 8 – Summary of Urology Measure Performance**
 - Final cohort
 - Model parameters and performance
 - ASC measure score performance
- **Section 9 – Detailed Discussion of Colonoscopy Measure**
 - Background and rationale for measure updates
 - Updates to measure code sets
 - PAA updates
- **Section 10 – Summary of Colonoscopy Measure Performance after Updates**
 - Final cohort
 - Model parameters and performance
 - ASC measure score performance
- **Section 11 – Glossary**

The Appendices contain detailed measure information:

- **Appendix A**: Statistical approach to calculating facility-level risk-standardized hospital visit rates;
- **Appendix B-E**: Summary of annual updates to the measure by year; and
- **Appendix F**: Detailed description of the planned admission algorithm.

The report frequently references the measure data dictionaries for detailed coding; these dictionaries are available [here](#) on *QualityNet*. For additional references, the original measure technical reports and the 2022 measure updates and specifications report are available on the Ambulatory Surgical Centers measures page of [QualityNet](#).

2. BACKGROUND AND OVERVIEW OF MEASURE METHODOLOGY

2.1. Background on Measures

The Yale New Haven Health Services Corporation – Center for Outcomes Research and Evaluation (YNHHSC/CORE) developed these measures for the Centers for Medicare & Medicaid Services (CMS) under a contract supporting the development of outpatient and ambulatory care outcome measures. CMS contracted with CORE to reevaluate these measures annually to make improvements based on stakeholder input and to incorporate advances in science and/or changes in coding. The 2023 updates described in this report were made in preparation for public reporting for the calendar years 2021-2022 performance period (orthopedic and urology measure), 2020-2022 performance period (colonoscopy measure), 2022 performance period (general surgery), and 2025 payment determination (January 2025 public reporting) for the Ambulatory Surgical Center Quality Reporting (ASCQR) program. [Section 3.1](#), [Section 5.1](#), and [Section 7.1](#) detail a performance period modification as a result of the COVID-19 public health emergency. The measures' histories, briefly, are:

General Surgery Measure

The general surgery measure received Consensus Based Entity (CBE) endorsement in 2018 (CBE ID #3357). The measure will be first publicly reported in January 2024.

Orthopedic Measure

The orthopedic measure received CBE endorsement in 2019 (CBE ID #3470). In 2018, CMS held a national confidential reporting period (dry run) for the measure. The measure was first publicly reported in January 2022.

Urology Measure

The urology measure received CBE endorsement in 2019 (CBE ID #3366). In 2018, CMS held a national confidential reporting period (dry run) for the measure. The measure was first publicly reported in January 2022.

Colonoscopy Measure

The colonoscopy measure received CBE endorsement in 2014 (CBE ID #2539) and was re-endorsed in 2020. In 2015, CMS held a national, confidential reporting period (dry run) for the measure. The measure was first publicly reported in December 2017.

2.2. Overview of Measure Methodology

This section provides a high-level summary of the current measure specifications, including updates from the 2022 reevaluation, which are discussed in detail in [Section 3](#), [Section 5](#), [Section 7](#), and [Section 9](#).

General Surgery Measure

This measure was developed to improve the quality of care delivered to patients undergoing general surgery procedures in an ASC. To assess quality, the measure calculates the risk-standardized rate of return to a hospital for an unplanned hospital visit within seven days of qualified general surgery procedures. The general surgery measure includes all ASCs that performed these procedures during the performance period. Further information on the measure development process is available in the Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers: Measure Technical Report (2017) located [here](#) on *QualityNet*.

Orthopedic Measure

This measure was developed to improve the quality of care delivered to patients undergoing orthopedic procedures in an ASC. To assess quality, the measure calculates the risk-standardized rate of return to a hospital for an unplanned hospital visit within seven days of qualified orthopedic surgeries or procedures. The orthopedic procedure measure includes all ASCs that performed these procedures during the performance period. Further information on the measure development process is available in the Hospital Visits After Orthopedic Ambulatory Surgical Center Procedures: Measure Technical Report (2017) and 2018 Technical Report Addendum located [here](#) on *QualityNet*.

Urology Measure

This measure was developed to improve the quality of care delivered to patients undergoing urology procedures in an ASC. To assess quality, the measure calculates the risk-standardized rate of return to a hospital for an unplanned hospital visit within seven days of qualified urology procedures. The urology measure includes all ASCs that performed these procedures during the performance period. Further information on the measure development process is available in the Hospital Visits After Urology Ambulatory Surgical Center Procedures: Measure Technical Report (2017) and 2018 Technical Report Addendum located [here](#) on *QualityNet*.

Colonoscopy Measure

This measure was developed to improve the quality of care delivered to patients undergoing ASC and hospital outpatient department (HOPD) colonoscopy procedures.

To assess quality, the measure calculates the risk-standardized rate of return to a hospital for an unplanned hospital visit within seven days of colonoscopy procedures. The colonoscopy measure includes all non-federal acute care HOPDs and ASCs that performed qualifying colonoscopies during the performance period. The measure is calculated separately for each facility type and presented in two separate reports. Further information on the measure development process is available in the 2014 Measure Technical Report located [here](#) on *QualityNet* and in the literature.¹

2.2.1. Cohort

General Surgery Measure Inclusion Criteria

The target population for this measure is Medicare fee-for-service (FFS) patients aged 65 years and older, undergoing selected 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 procedures: abdominal, alimentary tract, breast, skin/soft tissue, wound, and varicose vein. The measure includes patients who are:

- Medicare FFS patients aged 65 years and older.
Rationale: Medicare beneficiaries under age 65 typically have a higher burden of disability, and it is therefore difficult to adequately risk adjust for the under-65 population.
- Patients with continuous enrollment in Medicare FFS Parts A and B in the 12 months prior to the surgery.
Rationale: Patients with full FFS enrollment have all claims available for identifying comorbidities for risk adjustment.

The measure includes procedures that (1) are routinely performed at ASCs, (2) involve increased risk of post-surgery hospital visits, and (3) are within the scope of general surgery training. The measure includes a subset of procedures performed at ASCs identified using Medicare's list of covered ASC procedures. The measure includes "major" and "minor" procedures, as indicated by the Medicare Physician Fee Schedule GSI values of 090 and 010, respectively, and certain cystoscopy procedures, as described below. The GSI code reflects the number of post-operative days that are included in given procedure's global surgical payment and identifies surgical procedures of greater complexity and follow-up care.

The measure excludes procedures that:

- Are on the ASC list of covered procedures that do not involve or require major or prolonged invasion of body cavities, extensive blood loss, major blood vessels, or care that is emergent or life-threatening.*²
- Are part of the AHRQ Clinical Classifications Software's (CCS's) gastrointestinal endoscopy, endocrine, or vascular procedures, other than varicose vein procedures, as reasons for hospital visits are typically related to patients' underlying comorbidities.

General Surgery Measure Exclusion Criteria

The measure excludes:

- Surgeries for patients who survived at least seven days but were not continuously enrolled in Medicare FFS Parts A and B in the seven days after the surgery.
Rationale: These patients are excluded to ensure all patients have full data available for outcome assessment.

Orthopedic Measure Inclusion Criteria

The target population for this measure is Medicare FFS patients aged 65 years and older undergoing selected outpatient orthopedic surgeries, typically performed by an orthopedist, at ASCs. The measure includes patients who are:

- Medicare FFS patients aged 65 years and older.
Rationale: Medicare beneficiaries under age 65 typically have a higher burden of disability, and it is therefore difficult to adequately risk adjust for the under-65 population.
- Patients with continuous enrollment in Medicare 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.

The measure includes procedures that (1) are routinely performed at ASCs, (2) involve increased risk of post-surgery hospital visits, and (3) are routinely performed by orthopedists. The measure includes a subset of procedures

* This list of surgeries was used for several reasons. 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 procedures. Using an existing, defined list of same-day surgical procedures, rather than defining surgical procedures de novo, is useful for long-term measure maintenance. Procedures included on Medicare's list of covered ASC procedures are defined using Healthcare Common Procedure Coding System (HCPCS) and Current Procedural Terminology (CPT®) codes.

performed at ASCs identified using Medicare’s list of covered ASC procedures. The measure includes a subset of procedures performed at ASCs identified using Medicare’s list of covered ASC procedures. The measure includes “major” and “minor” procedures, as indicated by the Medicare Physician Fee Schedule GSI values of 090 and 010, respectively, and certain cystoscopy procedures, as described below. The GSI code reflects the number of post-operative days that are included in given procedure’s global surgical payment and identifies surgical procedures of greater complexity and follow-up care.

The measure excludes procedures that:

- Are on the ASC list of covered procedures that do not involve or require major or prolonged invasion of body cavities, extensive blood loss, major blood vessels, or care that is emergent or life-threatening.[†]
- Are part of the AHRQ CCS’s “operations on the musculoskeletal system” group of procedures.[‡]

Except for CCS 144,[‡] the orthopedic ASC measure cohort includes all other major and minor surgical procedures in AHRQ’s “operations on the musculoskeletal system” group. See the accompanying 2023 Orthopedic Measure Data Dictionary for a complete listing of all Current Procedural Terminology (CPT®) procedure codes included in the measure cohort.

Orthopedic Measure Exclusion Criteria

The measure excludes:

- Surgeries for patients who survived at least seven days but were not continuously enrolled in Medicare FFS Parts A and B in the seven days after the surgery.
Rationale: These patients are excluded to ensure all patients have full data available for outcome assessment.

[†] This list of surgeries was used for several reasons. 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 procedures. Using an existing, defined list of same-day surgical procedures, rather than defining surgical procedures de novo, is useful for long-term measure maintenance. Procedures included on Medicare’s list of covered ASC procedures are defined using Healthcare Common Procedure Coding System (HCPCS) and Current Procedural Terminology (CPT®) codes.

[‡] Procedures to treat a facial fracture or dislocation (defined by AHRQ clinical category CCS 144) were removed because our experts indicated that these procedures are typically performed by plastic surgeons; ear, nose, and throat surgeons; and oral maxillofacial surgeons

Urology Measure Inclusion Criteria

The target population for this measure is Medicare FFS patients aged 65 years and older, undergoing selected outpatient urology procedures typically performed by urologists at ASCs. The measure includes patients who are:

- Medicare FFS patients aged 65 years and older.
Rationale: Medicare beneficiaries under age 65 typically have a higher burden of disability, and it is, therefore, difficult to adequately risk adjust for the under-65 population.
- Patients with continuous enrollment in Medicare FFS Parts A and B in the 12 months prior to the procedure.
Rationale: Patients with full enrollment have all claims available for identifying comorbidities for risk adjustment.

The measure includes procedures that (1) are routinely performed at ASCs, (2) involve increased risk of post-procedure hospital visits, and (3) are routinely performed by urologists. The measure includes a subset of procedures performed at ASCs identified using Medicare's list of covered ASC procedures. The measure includes "major" and "minor" procedures, as indicated by the Medicare Physician Fee Schedule GSI values of 090 and 010, respectively, and certain cystoscopy procedures, as described below. The GSI code reflects the number of post-operative days that are included in 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:
http://www.cms.hhs.gov/Reports/downloads/pope_2000_2.pdf

The measure excludes procedures that:

- Are on the ASC list of covered procedures that do not involve or require major or prolonged invasion of body cavities, extensive blood loss, major blood vessels, or care that is emergent or life threatening.[§]
- Are part of the AHRQ CCS's "operations on the urinary system" and "operations on the male genital organs" groups of procedures.³

[§] This list of surgeries was used for several reasons. 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 procedures. Using an existing, defined list of same-day surgical procedures, rather than defining surgical procedures de novo, is useful for long-term measure maintenance. Procedures included on Medicare's list of covered ASC procedures are defined using Healthcare Common Procedure Coding System (HCPCS) and Current Procedural Terminology (CPT®) codes.

The measure only includes cystoscopy with therapeutic intervention and does not include cystoscopy alone or cystoscopy with biopsy alone in the measure cohort. We do not include other endoscopy procedures in the measure cohort. These excluded endoscopy procedures are lower-risk procedures often with a high volume and a low outcome rate (much like minor surgeries), are not typically performed by surgical teams, and do not require an operating room.

Nephrotomy and nephrostomy procedures (defined by AHRQ clinical category CCS 103) were removed because our experts indicated that these procedures are typically performed by interventional radiologists.

Urology Measure Exclusion Criteria

The measure excludes:

- Surgeries for patients who survived at least seven days but were not continuously enrolled in Medicare FFS Parts A and B in the seven days after the surgery are excluded.
Rationale: These patients are excluded to ensure all patients have full data available for outcome assessment.

Colonoscopy Measure Inclusion Criteria

The target population for this measure is Medicare FFS patients aged 65 years or older undergoing selected outpatient colonoscopies. The measure includes procedures that are:

- Identified using Healthcare Common Procedure Coding System (HCPCS) codes and CPT® codes (see 2023 Colonoscopy Measure Data Dictionary). Qualifying colonoscopy procedures were not included in the measure if they were concurrently billed with a high-risk colonoscopy procedure code (see 2023 Colonoscopy Measure Data Dictionary tab “*Colonos Cohort*”).
Rationale: These codes identify a clinically coherent group of patients undergoing low-risk outpatient colonoscopy for colorectal cancer screening, diagnostic evaluation for symptoms and signs of disease, and biopsies or removal of pre-cancerous lesions or polyps.
- For patients who are aged 65 or over at the time of the procedure.
Rationale: Medicare beneficiaries under age 65 typically have a higher burden of disability, and it is therefore difficult to adequately risk adjust for the population under 65.
- For patients with continuous enrollment in Medicare FFS Parts A and B in the 12 months prior to the procedure.
Rationale: Patients with full enrollment have all claims available for identifying comorbidities for risk adjustment.

Colonoscopy Measure Exclusion Criteria

The exclusions for the colonoscopy measure are narrowly targeted and necessary to ensure that the cohort is clinically coherent and has complete data available to capture outcomes that occur following the colonoscopy. The measure's exclusions reflect clinical considerations and prevent unfair distortion of performance results.

The measure excludes:

- Procedures for patients who lack continuous enrollment in Medicare FFS Parts A and B in the seven days after the procedure.
Rationale: We exclude these patients to ensure all patients have full data available for outcome assessment.
- Colonoscopies that occur concurrently with high-risk upper gastrointestinal (GI) endoscopies.
Rationale: Patients undergoing concurrent high-risk upper GI endoscopies, such as upper GI endoscopies for control of bleeding or treatment of esophageal varices, are at higher risk for hospital visits than patients undergoing a typical colonoscopy. Patients undergoing these procedures are often unwell and have a higher risk profile than typical colonoscopy patients. Please refer to the 2023 Colonoscopy Measure Data Dictionary tab "*Colonos Exclusions*" to review the list of codes used to identify these conditions.
- Colonoscopies for patients with a history of inflammatory bowel disease (IBD) or diverticulitis in the year preceding the colonoscopy, or a diagnosis of these conditions at the time of the index colonoscopy and/or on a claim for a hospital visit within seven days of the colonoscopy.
Rationale: Patients with a history or diagnosis of IBD or diverticulitis at the time of colonoscopy often include both stable and actively unwell patients, and we likely could not fully characterize and adjust for their pre-procedure risk of needing a post-procedure hospital visit. Post-procedure admissions for IBD or diverticulitis are indicative of active disease at the time of the colonoscopy and are thus also used to exclude these types of patients. Please refer to the 2023 Colonoscopy Measure Data Dictionary tab "*Colonos Exclusions*" to review the list of codes used to identify these conditions.
- Colonoscopies followed by a subsequent outpatient colonoscopy procedure within seven 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.

2.2.2. Outcome

General Surgery Measure

Unplanned Hospital Visits

The measure defines the outcome as any (one or more) unplanned hospital visits within seven days of an outpatient general surgery; a hospital visit includes any emergency department (ED) visit, observation stay, or unplanned inpatient admission occurring after the ASC procedure. The measure focuses on the outcome of unplanned hospital visits because this is a broad, patient-centered outcome that captures the full range of hospital visits resulting from adverse events or poor care coordination following outpatient surgery. This measure's goal is to assess and to illuminate variation in risk-adjusted hospital visits following surgery to support quality improvement.

ED visits and observation stays are defined using revenue center codes identified in Medicare Part B outpatient hospital claims. The 2023 General Surgery Measure Data Dictionary tab "*ASC Surg Outcome ED Obs*" provides the specific codes used to identify ED visits and observation stays.

Seven Day Time Frame

The measure limits the outcome to seven days, as existing literature suggests that most adverse events after outpatient surgery occur within the first seven days following the surgery.^{4,5} Also our empirical analyses during measure development indicated that the highest rates of hospital visits were within seven days of outpatient general surgery. Thus, based on existing literature and empirical findings, as well as input from the Technical Expert Panel (TEP), the measure development team concluded that unplanned hospital visits within seven days is the optimal outcome to ensure capture of surgery-related adverse events and to minimize the capture of hospital visits unrelated to the surgery.

Orthopedic Measure

Unplanned Hospital Visits

The measure defines the outcome as any (one or more) unplanned hospital visits within seven days of an outpatient orthopedic procedure; a hospital visit includes any emergency department (ED) visit, observation stay, or unplanned inpatient admission occurring after the ASC procedure. The measure focuses on the outcome of unplanned hospital visits because this is a broad, patient-centered outcome that captures the full range of hospital visits resulting from adverse events or poor care coordination following outpatient surgery. This

measure's goal is to support quality improvement through the assessment and illumination of the variation in risk-adjusted hospital visits following surgery.

ED visits and observation stays are defined using revenue center codes identified in Medicare Part B outpatient hospital claims. The 2023 Orthopedic Measure Data Dictionary tab "*ASC Ortho Outcome ED Obs*" provides the specific codes used to identify ED visits and observation stays.

Seven Day Time Frame

The measure limits the outcome to seven days, as existing literature suggests that most adverse events after outpatient surgery occur within the first seven days following the surgery^{4,5} and our empirical analyses during measure development indicated that the highest rates of hospital visits were within seven days of outpatient orthopedic procedure. Thus, based on existing literature and empirical findings, as well as input from the Technical Expert Panel (TEP) and orthopedic consultants, the measure development team concluded that unplanned hospital visits within seven days is the optimal outcome to ensure capture of surgery-related adverse events and to minimize capture of hospital visits unrelated to the surgery.

Urology Measure

Unplanned Hospital Visits

The measure defines the outcome as any (one or more) unplanned hospital visits within seven days of an outpatient urology procedure; a hospital visit includes any ED visit, observation stay, or unplanned inpatient admission occurring after the ASC procedure. The measure focuses on the outcome of unplanned hospital visits because this is a broad, patient-centered outcome that captures the full range of hospital visits resulting from adverse events or poor care coordination following outpatient surgery. This measure's goal is to assess and to illuminate variation in risk-adjusted hospital visits following surgery for quality improvement purposes.

ED visits and observation stays are defined using revenue center codes identified in Medicare Part B outpatient hospital claims. The 2023 Urology Measure Data Dictionary tab "*ASC Uro Outcome ED Obs*" provides the specific codes used to identify ED visits and observation stays.

Seven Day Time Frame

The measure limits the outcome to seven days, as existing literature suggests that most adverse events after urology procedure occur within the first seven days following the surgery,^{4,6} and our empirical analyses during measure

development indicated that the highest rates of hospital visits were within seven days of outpatient urology procedure. Thus, based on existing literature and empirical findings, as well as input from the TEP and urologist consultants, the measure development team concluded that unplanned hospital visits within seven days is the optimal outcome to ensure capture of surgery-related adverse events and to minimize capture of hospital visits unrelated to the surgery.

Colonoscopy Measure

Unplanned Hospital Visits

The measure defines the outcome as any (one or more) unplanned hospital visit within seven days of an outpatient colonoscopy; a hospital visit includes any ED visit, observation stay, or unplanned inpatient admission. The measure focuses on the outcome of unplanned hospital visits for several reasons. First, hospital visits are a broad outcome that captures the full range of potentially serious adverse events related to preparing for, undergoing, and recovering from the colonoscopy. Second, hospital visits are easily identifiable and measurable from claims data. Third, this broad outcome is consistent with a patient-centered view of care that prompts providers to fully account for and fully minimize all acute complications, such as syncope or abdominal pain, as opposed to only those narrowly related to procedural technique. Finally, hospital visits are costly; reducing hospital visits following colonoscopy may lead to substantial healthcare savings for patients and/or the payer (CMS).

The measure defines ED visits and observation stays using billing codes or revenue center codes identified in Medicare Part B outpatient hospital claims. The 2023 Colonoscopy Measure Data Dictionary tab “*Colonos Outcome ED Obs Stay*” provides the specific codes used to identify ED visits and observation stays.

Seven Day Time Frame

The measure limits the outcome of hospital visits to seven days, as existing literature suggests that most adverse events after colonoscopy occur within the first seven days following the procedure,⁷ and our empirical analyses during measure development indicated that the highest rates of hospital visits were within seven days of a colonoscopy. Thus, based on existing literature and empirical findings, as well as input from the TEP and public comment, the measure development team concluded that unplanned hospital visits within seven days is the optimal outcome to ensure capture of procedure-related adverse events and to minimize capture of hospital visits unrelated to the procedure.

2.2.3. Planned Admission Algorithm

All four measures identify planned admissions and remove these from the outcome. CMS distinguishes planned versus unplanned admissions through an evidenced-based algorithm, with only very minor differences across the measures that reflect the different clinical scenarios.⁸ “Planned” admissions are those planned by providers for anticipated medical treatment or procedures that must be provided in the inpatient setting. The measure does not count these in the outcome because variation in planned admissions does not reflect differences in quality of care. Appendix F provides a detailed description of the planned admission algorithm (PAA) as adapted for the three measures and the 2023 Data Dictionaries contain the code lists that define data elements used in the PAA. In brief, the algorithm uses the procedure codes and principal discharge diagnosis code on each inpatient hospital claim to identify admissions that are typically planned and may occur after an orthopedic procedure. 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). Admissions for an acute illness or for complications of care are never considered planned.

2.2.4. Risk-Adjustment Variables

General Surgery Measure

The measure adjusts for 27 risk-adjustment variables. The 2023 General Surgery Measure Data Dictionary tab “ASC Surg Risk Factor CCs” presents the definition of these variables, based on CMS hierarchical Condition Categories (CCs). The measure does not adjust for acute diagnoses that occur only at the time of the general surgery procedure for risk-adjustment because these diagnoses may represent complications of care; see the 2023 General Surgery Measure Data Dictionary tab “ASC Surgery CoC CCs” for a summary of these diagnoses. For a detailed description of the development of the risk-adjustment model, see the Facility-Level 7-Day Hospital Visits after General Surgery Procedures Performed at Ambulatory Surgical Centers: Measure Technical Report (2017) located here on *QualityNet*.

Orthopedic Measure

The measure adjusts for 29 risk-adjustment variables. The 2023 Orthopedic Measure Data Dictionary tab “ASC Ortho Risk-Factor CCs” presents the definition of these variables, based on CMS hierarchical CCs. The measure does not adjust for acute diagnoses that occur only at the time of the orthopedic procedure for risk-adjustment because these diagnoses may represent complications of care;

see the 2023 Orthopedic Measure Data Dictionary tab “ASC Ortho CoC CCs” for a summary of these diagnoses. For a detailed description of the development of the risk-adjustment model, see the Hospital Visits After Orthopedic Ambulatory Surgical Center Procedures: Measure Technical Report (2017) and 2018 Technical Report Addendum located [here](#) on *QualityNet*.

Urology Measure

The measure adjusts for 11 risk-adjustment variables. The 2023 Urology Measure Data Dictionary tab “ASC Uro Risk Factor CCs” presents the definition of these variables, based on CMS hierarchical CCs. The measure does not adjust for acute diagnoses that occur only at the time of the urology procedure for risk-adjustment because these diagnoses may represent complications of care; see the 2023 Urology Measure Data Dictionary tab “ASC Uro CoC” for a summary of these diagnoses. For a detailed description of the development of the risk-adjustment model, see the Hospital Visits After Urology Ambulatory Surgical Center Procedures: Measure Technical Report (2017) and 2018 Technical Report Addendum located [here](#) on *QualityNet*.

Colonoscopy Measure

The measure adjusts for 19 risk-adjustment variables. The 2023 Colonoscopy Measure Data Dictionary tab “Colonos Risk Factor CCs” presents the definition of these variables, based on CMS hierarchical CCs. The measure does not adjust for acute diagnoses that occur only at the time of the colonoscopy procedure for risk-adjustment because these diagnoses may represent complications of care; see the 2023 Colonoscopy Measure Data Dictionary tab “Colonos CoC CCs” for a summary of these diagnoses. For a detailed description of the development of the risk-adjustment model, see the 2014 Measure Technical Report located [here](#) on *QualityNet*.

2.2.5. Data Sources

General Surgery Measure

CMS uses Medicare FFS claims to identify general surgery procedures performed in the outpatient setting and subsequent hospital visits, as well as CMS enrollment and demographic data. Patient history is also assessed using claims data collected in the 12 months prior to the general surgery procedure.

The measure includes outpatient general surgery procedures identified using HCPCS codes and CPT codes (see the 2023 General Surgery Measure Data Dictionary tab “ASC Surg Cohort”). ASC-based general surgery procedures are identified from Part B ASC facility claims.

Orthopedic Measure

CMS uses Medicare FFS claims to identify orthopedic procedures performed in the outpatient setting and subsequent hospital visits, as well as CMS enrollment and demographic data. Patient history is also assessed using claims data collected in the 12 months prior to the orthopedic procedure.

The measure includes outpatient orthopedic procedures identified using HCPCS codes and CPT codes (see the 2023 Orthopedic Measure Data Dictionary tab “*ASC Ortho Cohort*”). ASC-based orthopedic procedures are identified from Part B ASC facility claims.

Urology Measure

CMS uses Medicare FFS claims to identify urology procedures performed in the outpatient setting and subsequent hospital visits, as well as CMS enrollment and demographic data. Patient history is also assessed using claims data collected in the 12 months prior to the urology procedure.

The measure includes outpatient urology procedures identified using HCPCS codes and CPT codes (see the 2023 Urology Data Measure Dictionary tab “*ASC Uro Cohort*”). ASC-based urology procedures are identified from Part B ASC facility claims.

Colonoscopy Measure

CMS uses Medicare FFS claims to identify colonoscopies performed in the outpatient setting and subsequent hospital visits, as well as CMS enrollment and demographic data. Patient history is also assessed using claims data collected in the 12 months prior to the colonoscopy procedure.

The measure includes outpatient colonoscopy procedures identified using HCPCS codes and CPT codes (see the 2023 Colonoscopy Measure Data Dictionary tab “*Colonos Cohort*”). ASC-based colonoscopies are identified from Part B ASC facility claims.

2.2.6. Measure Score Calculation

Each of the measures described in this report are calculated by fitting a hierarchical logistic regression model to the data. The two-level hierarchical logistic regression model accounts for the clustering of patients within ASC facilities and variation in sample size. The general surgery measure score is calculated as the ratio of a facility’s “predicted” number of outcomes to “expected” number of outcomes (P/E). For the orthopedic and urology measures, the measure score is calculated as the ratio of a facility’s “predicted”

number of outcomes to “expected” number of outcomes, multiplied by the national observed outcome rate, and then multiplied by 100 ($P/E \times \text{national rate} \times 100$). The colonoscopy measure score is calculated as the ratio of a facility’s “predicted” number of outcomes to “expected” number of outcomes, multiplied by the national rate, and then multiplied by 1,000 ($P/E \times \text{national rate} \times 1,000$). The model estimates the expected number of outcomes for each facility using the facility’s patient mix and the average facility-specific intercept (that is, the average intercept among all facilities in the sample). The measure also estimates the predicted number of outcomes for each facility using the same patient mix, but with an estimated facility-specific intercept. Operationally, the measure obtains the expected number of outcomes for each facility by summing the expected probabilities of the outcome for all patients treated at the facility. The expected probability of an outcome for each patient is calculated as a function of the estimated beta coefficients, a patient’s observed characteristics, and the average of the facility-specific intercept. It calculates the predicted number of outcomes for each facility by summing the predicted probabilities for all patients in the facility. The predicted probability of an outcome for each patient is calculated as a function of the estimated beta coefficients, a patient’s observed characteristics, and the facility-specific intercept. See Appendix A for more information on the statistical risk-adjustment models and the calculation of facility risk-standardized rates. The data used for measure calculation contains 100% of qualifying procedures at each facility and provides adequate sample size for a reliable measure score.

2.2.7. Categorizing Facility Performance

Each of the measures use bootstrapping to empirically construct a 95% interval estimate for risk-standardized measure score calculation. See details of the statistical approach in Appendix A. Measure scores are categorized by comparing each facility’s 95% interval estimate with the national rate. The interval estimate represents the range of probable values for the measure score. A 95% interval estimate indicates that there is 95% probability that the true value of the score lies between the lower limit and the upper limit of the interval.

CMS classifies facilities into performance categories as follows:

- “Better than expected performance” if the facility’s entire 95% interval estimate is below the national observed hospital visit rate.
- “No different than expected” if the facility’s 95% interval estimate includes the national observed hospital visit rate.
- “Worse than expected performance” if the entire 95% interval estimate is above the national observed hospital visit rate.

If a facility does not have the minimum number of eligible procedures to qualify for a measure (N<25 for the general surgery measure, N<30 for the colonoscopy measure, and N<35 for the orthopedic and urology measures), CMS cannot reliably tell how well the facility is performing and assigns the facility a separate category of “Number of cases too small.”

3. GENERAL SURGERY MEASURE FOR 2023 REPORTING

3.1. Background and Rationale for Measure Updates

The measure aims to improve the quality of care delivered to patients undergoing outpatient general surgery procedures. The measure is reevaluated annually.

Section 3.2 below details the measure updates instituted during the measure reevaluation period and the impact of these updates on the measure cohort and outcome.

3.2. Measure Updates

3.2.1. Updates to Measure Code Sets

The following updates were made to the code sets, which is the resource used for implementation of the measure specifications:

- Cohort Inclusion
 - The addition of 51 CPT codes
 - The removal of ten CPT codes

The PAA v4.0_2022 to PAA v4.0_2023. This change is detailed in Section 3.2.2.

3.2.2. Updates to the Planned Admission Algorithm

The general surgery measure outcome does not include planned inpatient admissions because they are not a signal of poor-quality care. The PAA excludes inpatient admissions occurring within two to seven days of the surgery if:

- The inpatient claim contains a procedure code or diagnosis that maps to the AHRQ CCS procedure or diagnosis category that is considered “always planned” (data dictionary tabs “PAA1 Always Planned Px” and “PAA2 Always Planned Dx”); or
- The inpatient claim contains a procedure code that maps to an AHRQ CCS procedure category that is considered “potentially planned” (data dictionary tab “PAA3 Pot Planned Px”) and the principal diagnosis on the claim is not in an AHRQ CCS diagnosis group or an individual ICD-10 code that is considered acute (data dictionary tab “PAA4 Acute Dx”).

We consider admissions occurring on the day of the surgery (Day 0) and Day 1 post-surgery as “unplanned” since many of these admissions directly follow surgery. ED visits and observation stays are never considered planned.

The surgery measure PAA uses the same coding as the planned readmission algorithm developed for CMS’s hospital readmission measures. The planned readmission algorithm v4.0 is updated annually to reflect coding updates and clinical expert review, and the PAA for the surgery measure is updated to align with the planned readmission algorithm.

For calendar year 2025 payment determination, the surgery measure will adopt version 4.0_2023 of the planned readmission algorithm, which updates the v4.0_2022 version used in this report (identified in the data dictionary tables for potentially planned procedures and acute diagnoses). This section describes updates to v4.0_2023. [Appendix F](#) provides more detailed information on the algorithm.

Update to V4.0_2023:

In September 2019 and December 2020, the AHRQ Healthcare Cost and Utilization Project (HCUP) released new versions of the CCS for ICD-10-CM and ICD-10-PCS codes, respectively, called the CCS-Refined (CCS-R). The magnitude of changes from the CCS beta versions to the CCS-R is extensive. Until comprehensive testing can be completed on the CCS-R, we will continue utilizing the existing beta version v2019.1 of the CCS for ICD-10-CM/PCS as the basis for the planned readmission algorithm specifications, updating it as appropriate with clinical expert input.

For current public reporting, we first reviewed the new ICD-10-CM and ICD-10-PCS codes in the FY 2022 code set to determine the most appropriate categorizations for the newly implemented ICD-10 codes, using the existing v2019.1 beta version of the CCS for ICD-10-CM/PCS.

We confirmed the clinical appropriateness of the CCS categorizations of the newly implemented ICD-10 codes in relation to the planned readmission algorithm, and whether any changes were warranted. This led to the following changes in the algorithm:

- Potentially planned procedures:
 - The addition of new ICD-10-PCS codes (associated with AHRQ CCS procedure categories 48 and 49) to the singular ICD-10-PCS code list.
- Acute diagnoses:

- The removal of ICD-10-CM codes (associated with AHRQ CCS diagnosis categories 237 and 661) from the singular ICD-10-CM code list;
- The addition of whole CCS 237 and 661, and the addition of ICD-10-CM codes (associated with AHRQ CCS diagnosis categories 155, 233, 238, 253, and 662).
- The revision of 13 ICD-10-CM code descriptions.

Analyses of the changes to the planned readmission algorithm specifications suggest minimal impact to readmission measure rates.

The complete set of codes reflected in the v4.0_2023 planned readmission algorithm adopted as the PAA for the surgery measure are available in the data dictionary tabs *“PAA1 Always Planned Px,” “PAA2 Always Planned Dx,” “PAA3 Pot Planned Px,”* and *“PAA4 Acute Dx.”*

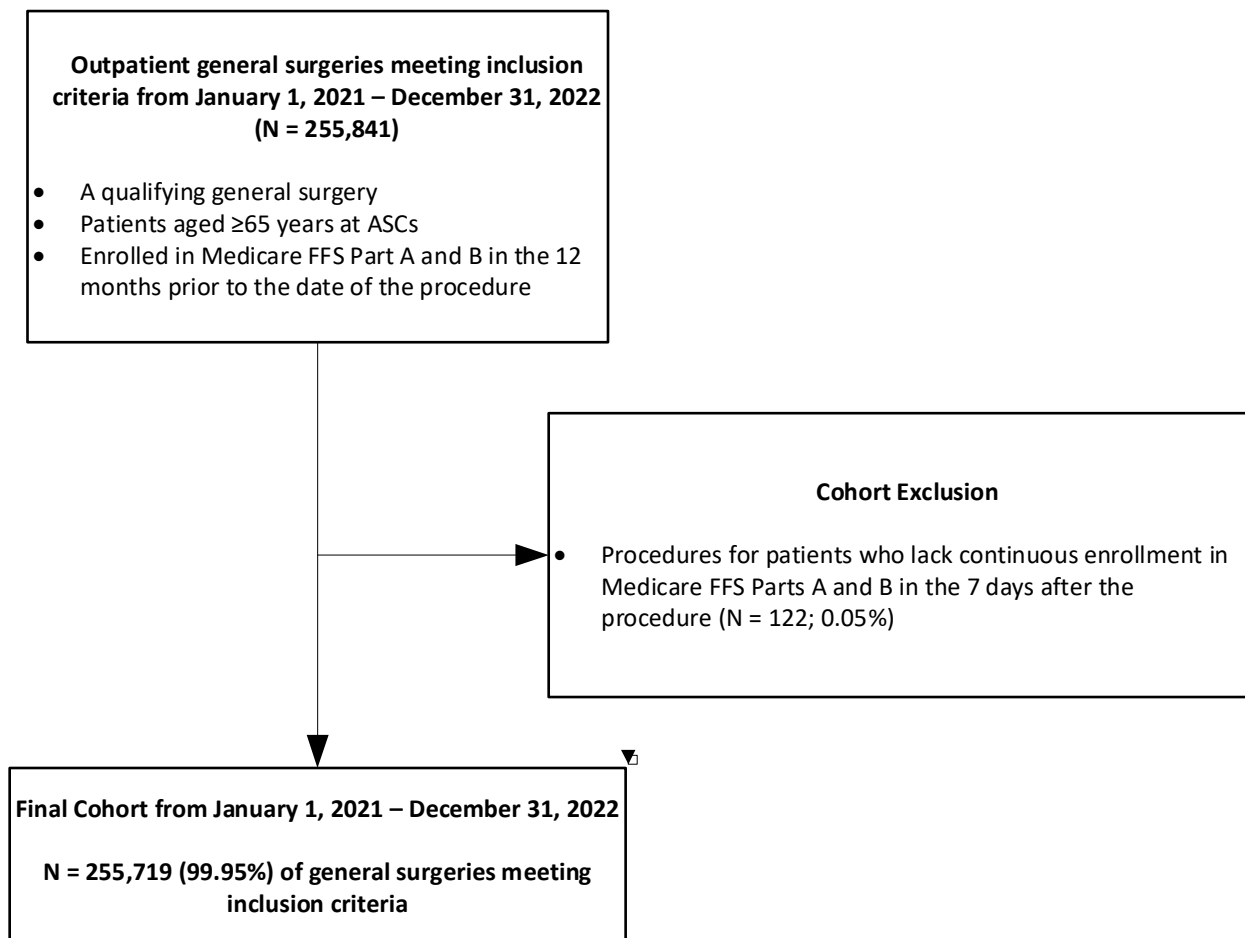
4. SUMMARY OF GENERAL SURGERY MEASURE PERFORMANCE

This section presents information on the frequency and effect of model risk factors, model performance, facility-level general surgery procedure volume, and risk-standardized rates across facilities after incorporating the changes described in [Section 3](#). All analyses were performed in data from the January 1, 2021 – December 31, 2022 performance period.

4.1. Final ASC General Surgery Cohort

[Figure 4.1.1](#) illustrates the final cohort using the January 1, 2021 – December 31, 2022 performance period data after applying all updates to inclusion and exclusion criteria described in [Section 3](#).

Figure 4.1.1. ASC General Surgery Cohort



4.2. General Surgery Model Parameters and Performance

We computed two summary statistics to assess model performance: the predictive ability and the area under the receiver operating characteristic (ROC) curve (c-statistic). To test model predictive ability, we plotted observed hospital visit rates from the lowest to the highest risk deciles based on predicted hospital visit probabilities. The c-statistic is an indicator of the model's discriminant ability or ability to correctly classify those who did and did not have an unplanned hospital visit within seven days of the orthopedic procedure. Potential values range from 0.5, meaning no better than chance, to 1.0, meaning perfect discrimination. A c-statistic of 1.0 indicates perfect prediction, implying patients' outcomes can be predicted completely by their risk factors, and physicians and facilities play no role in patients' outcomes. The frequency of model risk factors and model parameters and performance are presented in this section, Section 4.2. In Section 4.3, we present the distributions of general surgery procedure volumes and risk-standardized hospital visit rates across facilities.

Table 4.2.1 shows the frequency of risk factors used in the risk-adjustment model. Table 4.2.2 presents the corresponding odds ratios (ORs) and 95% confidence intervals (CIs) from the hierarchical logistic regression model. Note that we do not present ORs for the interaction term between procedure type and work RVU. Table 4.2.3 presents the general surgery model performance values.

Please note that, due to seasonal fluctuations, a truncated look-back period for risk adjustment in response to CMS's ECE policy, and other factors, the statistics from the first time period (January 1, 2021 – December 31, 2021) that are presented in the tables within this section are not directly comparable to the other time period.

Table 4.2.1. Frequency of General Surgery Model Risk Factors Among ASCs over Different Time Periods

Risk Factor (% unless otherwise indicated)	1/1/2021-12/31/2021	1/1/2022-12/31/2022	1/1/2021-12/31/2022
Total N	128,546	127,173	255,719
Age minus 65 (years above 65)	10.70 (6.99)	10.68 (6.89)	10.69 (6.94)
Work Relative Value Units – Mean (SD)	7.19 (3.67)	7.21 (3.66)	7.20 (3.66)
Other benign tumors (CC15, 16)	72.67	75.20	73.93
Liver or biliary disease (CC 27-32)	7.10	7.72	7.41
Intestinal obstruction or perforation (CC 33)	1.26	1.46	1.36
Dementia or senility (CC 51, 52, 53)	4.55	5.18	4.87
Psychiatric disorders (CC 57-63)	14.05	16.06	15.05
Other significant central nervous system (CNS) disease (CC 77-80)	2.82	3.15	2.98
Ischemic Heart Disease (CC 86-89)	20.26	22.58	21.41

Risk Factor (% unless otherwise indicated)	1/1/2021- 12/31/2021	1/1/2022- 12/31/2022	1/1/2021- 12/31/2022
Specified arrhythmias and other heart rhythm disorders (CC 96, 97)	22.05	24.39	23.21
Stroke (CC 99, 100)	2.09	2.50	2.29
Chronic lung disease (CC 110-113)	12.76	14.22	13.49
Pneumonia (CC 114-116)	3.51	3.83	3.67
Dialysis or severe chronic kidney disease (CC 134, 136, 137)	2.18	2.34	2.26
Benign prostatic hyperplasia	14.69	17.15	15.91
Cellulitis, local skin infection (CC 164)	8.46	9.15	8.80
Major traumatic fracture or internal injury (CC 169-174)	20.93	24.18	22.54
Complications of care (CC 176, 177)	5.81	6.43	6.12
Long term (current) use of anticoagulants	8.14	9.71	8.92
Opioid abuse	0.38	0.45	0.41
Procedure type: Abdomen and its contents	12.87	12.36	12.62
Procedure type: Alimentary tract	6.04	6.28	6.16
Procedure type: Breast	7.53	7.59	7.56
Procedure type: Skin/soft tissue	50.80	51.01	50.90
Procedure type: Wound	22.26	22.31	22.29
Procedure type: Vascular	0.50	0.44	0.47

Notes: CC-related risk factors are defined by v24 of CC map.

Table 4.2.2. Adjusted ORs and 95% CIs for the General Surgery Logistic Regression Model Among ASCs over Different Time Periods

Risk Factor (% unless otherwise indicated)	1/1/2021- 12/31/2021	1/1/2022- 12/31/2022	1/1/2021- 12/31/2022
Age	1.03 (1.02-1.03)	1.03 (1.02-1.04)	1.03 (1.02-1.03)
Other benign tumors (CC 15, 16)	0.75 (0.68-0.84)	0.88 (0.79-0.98)	0.81 (0.76-0.88)
Liver or biliary disease (CC, 27-32)	1.39 (1.22-1.58)	1.24 (1.09-1.41)	1.30 (1.19-1.43)
Intestinal obstruction or perforation (CC 33)	1.13 (0.86-1.49)	1.21 (0.94-1.55)	1.16 (0.97-1.40)
Dementia or senility (CC 51-53)	1.40 (1.20-1.64)	1.25 (1.07-1.46)	1.32 (1.19-1.48)
Psychiatric disorders (CC 57-63)	1.34 (1.20-1.49)	1.29 (1.16-1.43)	1.31 (1.22-1.42)
Other significant central nervous system (CNS) disease (CC 77-80)	1.77 (1.47-2.12)	1.30 (1.08-1.58)	1.52 (1.33-1.73)
Ischemic Heart Disease (CC 86-89)	1.19 (1.07-1.31)	1.22 (1.10-1.34)	1.20 (1.12-1.29)

Risk Factor (% unless otherwise indicated)	1/1/2021- 12/31/2021	1/1/2022- 12/31/2022	1/1/2021- 12/31/2022
Specified arrhythmias and other heart rhythm disorders (CC 96, 97)	1.24 (1.12-1.38)	1.19 (1.08-1.32)	1.22 (1.13-1.31)
Stroke (CC 99, 100)	1.29 (1.04-1.61)	1.30 (1.06-1.60)	1.29 (1.11-1.49)
Chronic lung disease (CC 110, 111, 112, 113)	1.31 (1.18-1.47)	1.30 (1.17-1.44)	1.31 (1.21-1.41)
Pneumonia (CC 114, 115, 116)	1.40 (1.19-1.66)	1.39 (1.18-1.64)	1.40 (1.24-1.57)
Dialysis or severe chronic kidney disease (CC 134, 136, 137)	1.31 (1.06-1.63)	1.67 (1.38-2.02)	1.49 (1.30-1.72)
Benign prostatic hyperplasia	1.16 (1.05-1.29)	1.10 (0.99-1.22)	1.13 (1.05-1.21)
Cellulitis, local skin infection (CC 164)	1.24 (1.08-1.42)	1.27 (1.12-1.44)	1.25 (1.14-1.38)
Major traumatic fracture or internal injury (CC 169, 170, 171, 172, 173, 174)	1.13 (1.02-1.25)	1.19 (1.08-1.31)	1.16 (1.08-1.24)
Complications of care (CC 176, 177)	1.21 (1.03-1.40)	1.21 (1.04-1.40)	1.21 (1.09-1.34)
Long term (current) use of anticoagulants	1.34 (1.17-1.53)	1.21 (1.06-1.37)	1.27 (1.15-1.39)
Opioid abuse	0.99 (0.56-1.74)	1.97 (1.33-2.92)	1.49 (1.08-2.05)
Procedure type: Alimentary tract	—	—	—
Procedure type: Breast	—	—	—
Procedure type: Skin/soft tissue	—	—	—
Procedure type: Wound	—	—	—
Procedure type: Vascular	—	—	—
Work RVU	—	—	—

Notes: CC-related risk factors are defined by v24 of CC map.

OR=Odds ratio; CI=Confidence interval

Table 4.2.3. General Surgery Logistic Regression Model Performance Among ASCs over Different Time Periods

Characteristic	1/1/2021- 12/31/2021	1/1/2022- 12/31/2022	1/1/2021- 12/31/2022
Predictive ability, % (lowest decile – highest decile)	0.66 – 5.33	0.66 – 5.33	0.66 – 5.29
c-statistic	0.704	0.696	0.699

4.3. Distribution of Facility-Level Measure Score

Table 4.3.1 presents the number of index general surgery procedures. There were 3,485 ASCs with at least one qualifying index general surgery procedure in the 2023 data. The

median number of qualifying procedures for ASCs was 17 (interquartile range [IQR] = 4 – 56).

Table 4.3.2 shows the mean and median risk-standardized hospital visit (RSHV) ratios. The median ASC RSHV ratio was 0.99 hospital visits (IQR = 0.97 – 1.01). Figure 4.3.1 shows the overall distribution of RSHV ratios for ASCs.

Finally, Table 4.3.3 presents the between-facility variance and median OR. Between-facility variance for ASCs was 0.100 (SE= 0.017). If there were no systematic differences between facilities, the between-facility variances would be 0. The median OR represents the median increase in odds of a hospital visit if a procedure on a single patient was performed at a higher-risk facility compared to a lower-risk facility. The estimated median ORs suggest a meaningful increase in the risk of a hospital visit if a procedure was performed at a higher risk facility compared to a lower risk facility. For ASCs, an OR value of 1.35 indicates that a patient has a 35% increase in the odds of a hospital visit if the same procedure was performed at higher risk ASC compared to a lower risk ASC.

Table 4.3.1. Distribution of General Surgery Cohort Volumes Among ASCs over Different Time Periods

Characteristic	1/1/2021-12/31/2021	1/1/2022-12/31/2022	1/1/2021-12/31/2022
Number of facilities	3,123	3,070	3,485
Mean number of procedures (SD)	41.16 (113.55)	41.42 (114.24)	73.38 (215.28)
Range (min – max)	1 – 1,710	1 – 1,535	1 – 3,127
25th percentile	3	3	4
50th percentile (median)	10	11	17
75th percentile	35	34	56

Table 4.3.2. Distribution of General Surgery Risk-Standardized Hospital Visit (RSHV) Ratios Among ASCs

Characteristic	1/1/2021-12/31/2022
Number of facilities	3,485
Mean RSHV ratio (SD)	1.00 (0.09)
Range (min – max)	0.59 – 1.84
25th percentile	0.97
50th percentile (median)	0.99
75th percentile	1.01

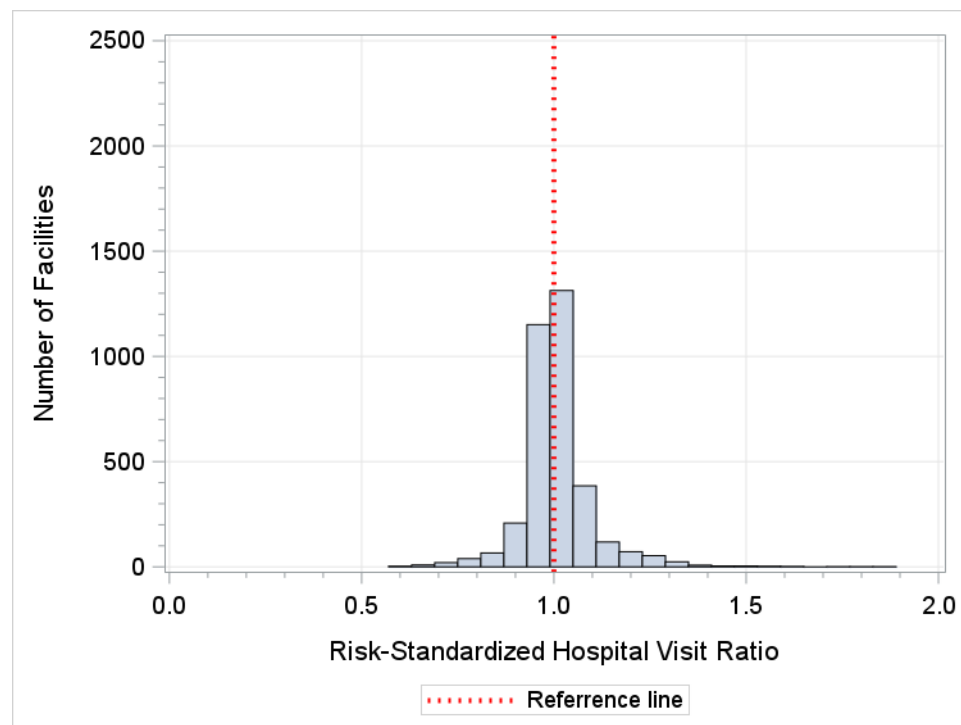
Note: SD=standard deviation

Table 4.3.3. General Surgery Between-Facility Variance Among ASCs

Characteristic	1/1/2021-12/31/2022
Between-facility variance (SE)	0.100 (0.017)
Median OR	1.35

Note: SE=standard error

Figure 4.3.1. Distribution of General Surgery Risk-Standardized Hospital Visit (RSHV) Ratios for Ambulatory Surgical Centers (ASCs)



4.4. Distribution of Facilities by Performance Category

Table 4.4.1 displays performance category assignments for ASCs. Of 3,485 ASC facilities in the study cohort, 3 performed “Better than the National Rate,” 1,283 performed “No Different than the National Rate,” and 6 performed “Worse than the National Rate.” 2,193 were classified as “Number of Cases Too Small” (fewer than 30) to reliably tell how well the hospital is performing. The distribution of RSHVR scores can be used to compare and distinguish facility performance. Since general surgery procedures at ASCs are elective and low risk, any corresponding hospital visit following general surgery ASC procedures are unexpected, potentially preventable, and disruptive to patients.

Table 4.4.1. General Surgery Facility Performance Category Distribution Among ASCs

Performance Category	ASCs	
	Number of facilities	% distribution
Better than the National Rate	3	0.09
No Different than the National Rate	1,283	36.81
Worse than the National Rate	6	0.17
Number of Cases Too Small	2,193	62.93

Note: Results based on January 1, 2021 – December 31, 2022 performance period

5. ORTHOPEDIC MEASURE FOR 2023 REPORTING

5.1. Background and Rationale for Measure Updates

The measure aims to improve the quality of care delivered to patients undergoing outpatient orthopedic procedures. The measure is reevaluated annually.

Importantly, the measurement period for 2023 public reporting returned to the typical 24 months in response to the COVID-19 public health emergency and CMS's decision to exclude claims data for January 1, 2020 – June 30, 2020 (Q1 and Q2 of 2020). This also impacts the 12-month look-back period for risk adjustment of this data. CMS's decision to exclude this data under its Extraordinary Circumstances Exceptions (ECE) policy was made to assist healthcare providers who were directing their resources toward caring for patients and ensuring the health and safety of staff. For more information on the exclusion of claims data for Q1 and Q2 2020, please refer to the following CMS communications:

- <https://www.cms.gov/newsroom/press-releases/cms-announces-relief-clinicians-providers-hospitals-and-facilities-participating-quality-reporting>
- <https://www.cms.gov/files/document/guidance-memo-exceptions-and-extensions-quality-reporting-and-value-based-purchasing-programs.pdf>
- <https://qualitynet.cms.gov/files/5f0707a3b8112700239dca19?filename=2020-62-IP.pdf>
- https://qualitynet.cms.gov/files/5f6d198d4ac8370021c54179?filename=HQR_FAQs_092420.pdf

Section 5.2 below details the measure updates instituted during the measure reevaluation period and the impact of these updates on the measure cohort and outcome.

5.2. Measure Updates

5.2.1 Updates to Measure Code Sets

The following updates were made to the measure code sets, which is the resource used for implementation of the measure specifications:

- Cohort Inclusion
 - The addition of Work Relative Value Unit (RVU) values for each cohort inclusion code
 - The removal of three CPT codes

The PAA v4.0_2022 was also updated to PAA v4.0_2023. This change is detailed in [Section 5.2.2](#).

5.2.2. Updates to the Planned Admission Algorithm

The orthopedic measure outcome does not include planned inpatient admissions because they are not a signal of poor-quality care. The PAA excludes inpatient admissions occurring within two to seven days of the procedure if:

- The inpatient claim contains a procedure code or diagnosis that maps to the AHRQ CCS procedure or diagnosis category that is considered “always planned” (data dictionary tabs “PAA1 Always Planned Px” and “PAA2 Always Planned Dx”); or
- The inpatient claim contains a procedure code that maps to an AHRQ CCS procedure category that is considered “potentially planned” (data dictionary tab “PAA3 Pot Planned Px”), and the principal diagnosis on the claim is not in an AHRQ CCS diagnosis group or an individual ICD-10 code that is considered acute (data dictionary tab “PAA4 Acute Dx”).

We consider admissions occurring on the day of the procedure (Day 0) and Day 1 post-procedure as “unplanned” since the vast majority of these admissions directly follow the procedure. ED visits and observation stays are never considered planned.

The orthopedic measure PAA uses the same coding as the planned readmission algorithm developed for CMS’s hospital readmission measures. The planned readmission algorithm v4.0 is updated annually to reflect coding updates and clinical expert review, and the PAA for the orthopedic measure is updated to align with the planned readmission algorithm.

For calendar year 2025 payment determination, the orthopedic measure will adopt version 4.0_2023 of the planned readmission algorithm, which updates the v4.0_2022 version used in this report (identified in the data dictionary tables for potentially planned procedures and acute diagnoses). This section describes updates to v4.0_2023. [Appendix F](#) provides more detailed information on the algorithm.

Update to V4.0_2023:

In September 2019 and December 2020, the AHRQ Healthcare Cost and Utilization Project (HCUP) released new versions of the CCS for ICD-10-CM and ICD-10-PCS codes, respectively, called the CCS-Refined (CCS-R). The magnitude of changes from the CCS beta versions to the CCS-R is extensive. Until comprehensive testing can be completed on the CCS-R, we will continue utilizing

the existing beta version v2019.1 of the CCS for ICD-10-CM/PCS as the basis for the planned readmission algorithm specifications, updating it as appropriate with clinical expert input.

For current public reporting, we first reviewed the new ICD-10-CM and ICD-10-PCS codes in the FY 2022 code set to determine the most appropriate categorizations for the newly implemented ICD-10 codes, using the existing v2019.1 beta version of the CCS for ICD-10-CM/PCS.

We confirmed the clinical appropriateness of the CCS categorizations of the newly implemented ICD-10 codes in relation to the planned readmission algorithm, and whether any changes were warranted. This led to the following changes in the algorithm:

- Potentially planned procedures:
 - The addition of new ICD-10-PCS codes (associated with AHRQ CCS procedure categories 48 and 49) to the singular ICD-10-PCS code list.
- Acute diagnoses:
 - The removal of ICD-10-CM codes (associated with AHRQ CCS diagnosis categories 237 and 661) from the singular ICD-10-CM code list;
 - The addition of whole CCS 237 and 661, and the addition of ICD-10-CM codes (associated with AHRQ CCS diagnosis categories 155, 233, 238, 253, and 662).
 - The revision of 13 ICD-10-CM code descriptions.

Analyses of the changes to the planned readmission algorithm specifications suggest minimal impact to readmission measure rates.

The complete set of codes reflected in the v4.0_2023 planned readmission algorithm adopted as the PAA for the orthopedic measure are available in the data dictionary tabs “PAA1 Always Planned Px,” “PAA2 Always Planned Dx,” “PAA3 Pot Planned Px,” and “PAA4 Acute Dx.”

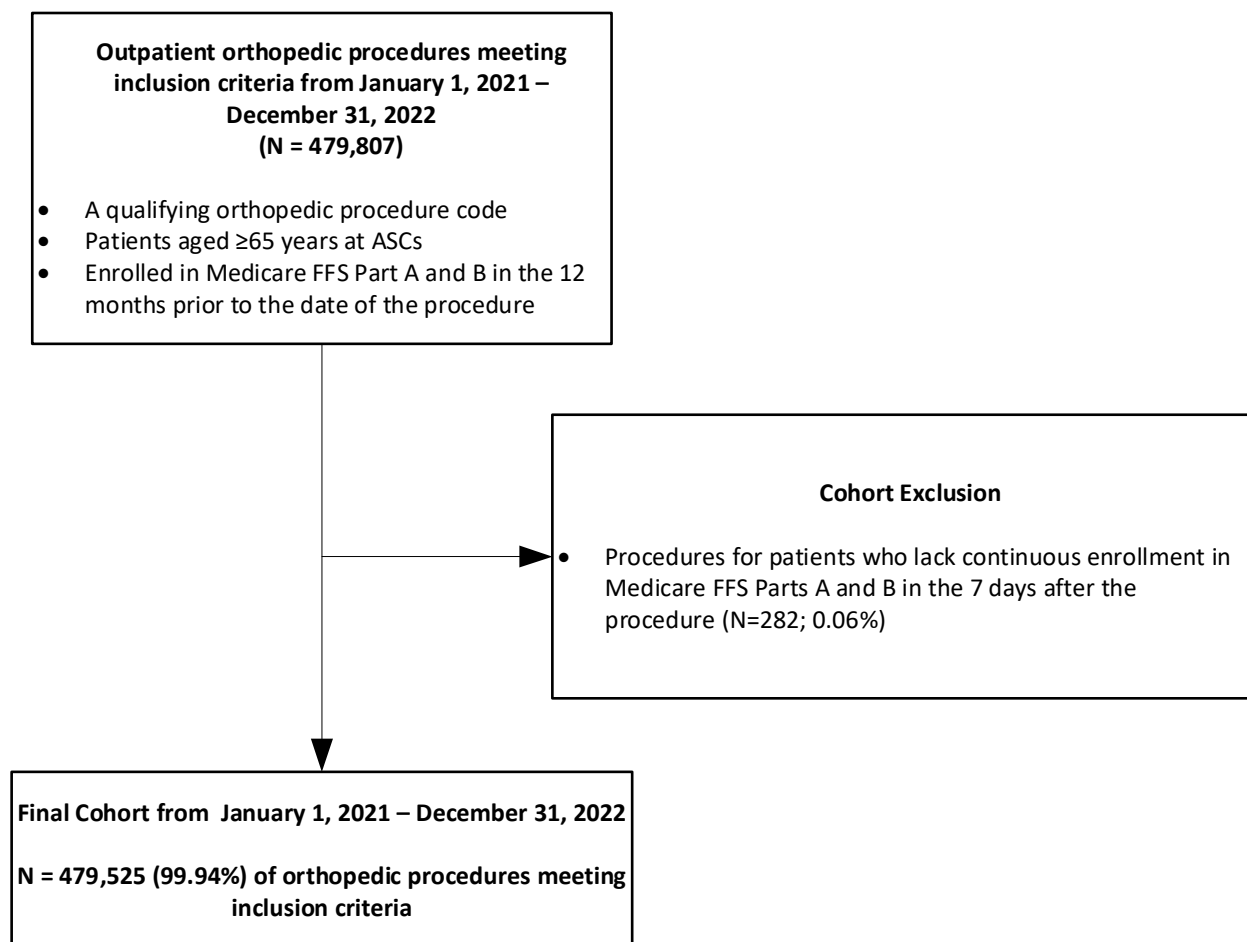
6. SUMMARY OF ORTHOPEDIC MEASURE PERFORMANCE

This section presents information on the frequency and effect of model risk factors, model performance, facility-level orthopedic procedure volume, and risk-standardized rates across facilities after incorporating the changes described in [Section 5](#). All analyses were performed in data from the January 1, 2021 – December 31, 2022 performance period.

6.1. Final ASC Orthopedic Cohort

[Figure 6.1.1](#) illustrates the final cohort using the January 1, 2021 – December 31, 2022 performance period data after applying all updates to inclusion and exclusion criteria described in [Section 5](#).

Figure 6.1.1. ASC Orthopedic Cohort



6.2. Orthopedic Model Parameters and Performance

We computed two summary statistics to assess model performance: the predictive ability and the area under the receiver operating characteristic (ROC) curve (c-statistic). To test model predictive ability, we plotted observed hospital visit rates from the lowest to the highest risk deciles based on predicted hospital visit probabilities. The c-statistic is an indicator of the model's discriminant ability or ability to correctly classify those who did and did not have an unplanned hospital visit within seven days of the orthopedic procedure. Potential values range from 0.5, meaning no better than chance, to 1.0, meaning perfect discrimination. A c-statistic of 1.0 indicates perfect prediction, implying patients' outcomes can be predicted completely by their risk factors, and physicians and facilities play no role in patients' outcomes. The frequency of model risk factors and model parameters and performance are presented in this section, [Section 6.2](#). In [Section 6.3](#), we present the distributions of orthopedic procedure volumes and risk-standardized hospital visit rates across facilities.

[Table 6.2.1](#) shows the frequency of risk factors used in the risk-adjustment model. [Table 6.2.2](#) presents the corresponding odds ratios (ORs) and 95% confidence intervals (CIs) from the hierarchical logistic regression model. [Table 6.2.3](#) presents the orthopedic model performance values.

Please note that, due to seasonal fluctuations, a truncated look-back period for risk adjustment in response to CMS's ECE policy, and other factors, the statistics from the first time period (January 1, 2021 - December 31, 2021) that are presented in the tables within this section are not directly comparable to the other time period.

Table 6.2.1. Frequency of Orthopedic Model Risk Factors Among ASCs over Different Time Periods

Risk Factor (% unless otherwise indicated)	1/1/2021-12/31/2021	1/1/2022-12/31/2022	1/1/2021-12/31/2022
Total N	232,722	246,803	479,525
Age (years above 65): mean (SD)	7.52 (5.29)	7.61 (5.23)	7.56 (5.26)
Work Relative Value Units (work RVUs): mean (SD)	9.56 (5.38)	10.07 (5.70)	9.82 (5.55)
Cancer (CC 8-14)	17.93	20.84	19.43
Disorders of fluid/electrolyte/acid-base (CC 23, 24)	9.19	10.31	9.77
Other gastrointestinal disorders (CC 38)	34.18	37.86	36.08
Bone/joint/muscle infections/necrosis (CC 39)	1.80	1.75	1.77
Rheumatoid and osteoarthritis (CC 40, 41, 42)	50.94	56.96	54.04
Dementia (CC 51-53)	3.01	3.37	3.20

Risk Factor (% unless otherwise indicated)	1/1/2021-12/31/2021	1/1/2022-12/31/2022	1/1/2021-12/31/2022
Psychiatric disorders (CC 57-63)	17.18	19.46	18.35
Multiple sclerosis (CC 77)	0.31	0.36	0.34
Seizure disorders and convulsions (CC 79)	1.00	1.14	1.08
Congestive heart failure (CC 85)	5.17	5.60	5.39
Ischemic heart disease (CC 86-89)	16.47	18.11	17.31
Hypertension and hypertensive disorders (CC 94, 95)	54.20	61.05	57.73
Stroke (CC 99, 100)	1.47	1.64	1.56
Vascular disease (CC 106-109)	16.20	18.23	17.25
Chronic lung disease (CC 111-113)	12.47	13.72	13.11
Pneumonia (CC 114-116)	2.39	2.55	2.47
Other respiratory disorders (CC 118)	15.72	19.56	17.70
Chronic renal disease (CC 132, 134-140)	10.01	10.97	10.51
Chronic ulcers (CC 157-161)	2.89	2.84	2.87
Head injury (CC 166, 167, 168)	3.13	3.65	3.40
Major traumatic fracture or internal injury (CC 170-172)	4.06	4.28	4.17
Major symptoms, abnormalities (CC 178)	48.20	53.33	50.84
Minor symptoms, signs, findings (CC 179)	85.11	88.75	86.98
Morbid Obesity (CC 22 [remove ICD-10 E66.2])	2.68	3.23	2.96
Opioid abuse (ICD-10-CM individual codes)	0.62	0.69	0.66
Tobacco use disorder (ICD-10-CM individual codes)	3.17	3.40	3.29
Chronic anticoagulant use (ICD-10-CM individual codes)	6.10	6.96	6.54

Notes: CC-related risk factors are defined by v24 of CC map.

Table 6.2.2. Adjusted ORs and 95% CIs for the Orthopedic Logistic Regression Model Among ASCs over Different Time Periods

Risk Factor (% unless otherwise indicated)	1/1/2021-12/31/2021	1/1/2022-12/31/2022	1/1/2021-12/31/2022
Age (years above 65)	1.03 (1.03-1.04)	1.04 (1.03-1.04)	1.04 (1.03-1.04)
Work Relative Value Units	1.08 (1.08-1.09)	1.09 (1.08-1.09)	1.08 (1.08-1.09)
Cancer (CC 8-14)	0.95 (0.88-1.02)	0.88 (0.82-0.94)	0.91 (0.86-0.95)

Risk Factor (% unless otherwise indicated)	1/1/2021-12/31/2021	1/1/2022-12/31/2022	1/1/2021-12/31/2022
Disorders of fluid/electrolyte/acid-base (CC 23, 24)	1.16 (1.07-1.27)	1.16 (1.07-1.26)	1.16 (1.10-1.24)
Other gastrointestinal disorders (CC 38)	1.14 (1.07-1.21)	1.11 (1.05-1.18)	1.12 (1.08-1.17)
Bone/joint/muscle infections/necrosis (CC 39)	1.34 (1.13-1.60)	1.35 (1.14-1.60)	1.35 (1.19-1.52)
Rheumatoid and osteoarthritis (CC 40, 41, 42)	1.12 (1.05-1.19)	1.11 (1.05-1.19)	1.11 (1.06-1.16)
Dementia (CC 51-53)	1.29 (1.13-1.46)	1.15 (1.01-1.31)	1.21 (1.11-1.33)
Psychiatric disorders (CC 57-63)	1.17 (1.09-1.26)	1.15 (1.08-1.23)	1.16 (1.10-1.22)
Multiple sclerosis (CC 77)	1.49 (1.00-2.22)	1.21 (0.81-1.83)	1.35 (1.01-1.79)
Seizure disorders and convulsions (CC 79)	1.61 (1.32-1.97)	1.42 (1.17-1.73)	1.51 (1.31-1.73)
Congestive heart failure (CC 85)	1.20 (1.08-1.34)	1.17 (1.05-1.30)	1.19 (1.10-1.28)
Ischemic heart disease (CC 86-89)	1.10 (1.02-1.18)	1.12 (1.04-1.20)	1.11 (1.05-1.17)
Hypertension and hypertensive disorders (CC 94, 95)	1.03 (0.97-1.09)	1.06 (1.00-1.12)	1.04 (0.99-1.08)
Stroke (CC 99, 100)	1.15 (0.96-1.38)	1.20 (1.02-1.43)	1.18 (1.04-1.34)
Vascular disease (CC 106-109)	1.13 (1.05-1.21)	1.20 (1.12-1.28)	1.16 (1.11-1.22)
Chronic lung disease (CC 111-113)	1.14 (1.05-1.23)	1.12 (1.03-1.20)	1.13 (1.07-1.19)
Pneumonia (CC 114-116)	1.13 (0.98-1.31)	1.24 (1.08-1.42)	1.19 (1.08-1.32)
Other respiratory disorders (CC 118)	1.04 (0.97-1.13)	1.08 (1.01-1.16)	1.06 (1.01-1.12)
Chronic renal disease (CC 132, 134-140)	1.09 (1.00-1.19)	1.15 (1.06-1.25)	1.13 (1.06-1.19)
Chronic ulcers (CC 157-161)	1.30 (1.13-1.51)	1.31 (1.14-1.51)	1.31 (1.18-1.45)
Head injury (CC 166, 167, 168)	1.34 (1.18-1.52)	1.16 (1.03-1.31)	1.24 (1.13-1.35)
Major traumatic fracture or internal injury (CC 170-172)	1.06 (0.93-1.21)	1.19 (1.05-1.34)	1.13 (1.03-1.23)
Major symptoms, abnormalities (CC 178)	1.23 (1.15-1.31)	1.31 (1.23-1.39)	1.26 (1.21-1.32)
Minor symptoms, signs, findings (CC 179)	1.15 (1.04-1.26)	1.08 (0.98-1.2)	1.11 (1.04-1.19)
Morbid Obesity (CC 22 [remove ICD-10 E66.2])	1.31 (1.13-1.51)	1.02 (0.88-1.17)	1.14 (1.03-1.26)
Opioid abuse (ICD-10-CM individual codes)	1.16 (0.88-1.52)	1.03 (0.78-1.35)	1.09 (0.90-1.33)

Risk Factor (% unless otherwise indicated)	1/1/2021-12/31/2021	1/1/2022-12/31/2022	1/1/2021-12/31/2022
Tobacco use disorder (ICD-10-CM individual codes)	1.23 (1.07-1.41)	1.05 (0.91-1.2)	1.13 (1.03-1.25)
Chronic anticoagulant use (ICD-10-CM individual codes)	1.13 (1.02-1.25)	1.17 (1.07-1.28)	1.15 (1.08-1.23)

Notes: CC-related risk factors are defined by v24 of CC map.

OR=Odds ratio; CI=Confidence interval

Table 6.2.3. Orthopedic Logistic Regression Model Performance Among ASCs over Different Time Periods

Characteristic	1/1/2021-12/31/2021	1/1/2022-12/31/2022	1/1/2021-12/31/2022
Predictive ability, % (lowest decile – highest decile)	0.80 – 5.56	0.72 – 5.68	0.77 – 5.59
c-statistic	0.670	0.681	0.675

6.3. Distribution of Facility-Level Measure Score

Table 6.3.1 presents the number of index orthopedic procedures. There were 2,961 ASCs with at least one qualifying index orthopedic procedure in the 2023 data. The median number of qualifying procedures for ASCs was 60 (IQR = 12 – 209).

Table 6.3.2 shows the mean and median risk-standardized hospital visit (RSHV) rates. The median ASC RSHV rate was 2.18 hospital visits per 100 procedures (IQR = 2.12 – 2.26). Figure 6.3.1 shows the overall distribution of RSHV rates for ASCs.

Finally, Table 6.3.3 presents the between-facility variance and median OR. Between-facility variance for ASCs was 0.062 (SE= 0.008). If there were no systematic differences between facilities, the between-facility variances would be 0. The median OR represents the median increase in odds of a hospital visit if a procedure on a single patient was performed at a higher-risk facility compared to a lower-risk facility. The estimated median ORs suggest a meaningful increase in the risk of a hospital visit if a procedure was performed at a higher risk facility compared to a lower risk facility. For ASCs, an OR value of 1.27 indicates that a patient has a 27% increase in the odds of a hospital visit if the same procedure was performed at higher risk ASC compared to a lower risk ASC.

Table 6.3.1. Distribution of Orthopedic Cohort Volumes Among ASCs over Different Time Periods

Characteristic	1/1/2021-12/31/2021	1/1/2022-12/31/2022	1/1/2021-12/31/2022
Number of facilities	2,705	2,742	2,961
Mean number of procedures (SD)	86.03 (123.22)	90.01 (131.36)	161.95 (246.25)
Range (min – max)	1 – 1,378	1 – 1,520	1 – 2,898
25th percentile	9	8	12
50th percentile (median)	37	38	60
75th percentile	112	120	209

Table 6.3.2. Distribution of Orthopedic Risk-Standardized Hospital Visit (RSHV) Rates Among ASCs

Characteristic	1/1/2021-12/31/2022
Number of facilities	2,961
Mean RSHV rate (SD)	2.20 (0.20)
Range (min – max)	1.01 – 3.68
25th percentile	2.12
50th percentile (median)	2.18
75th percentile	2.26

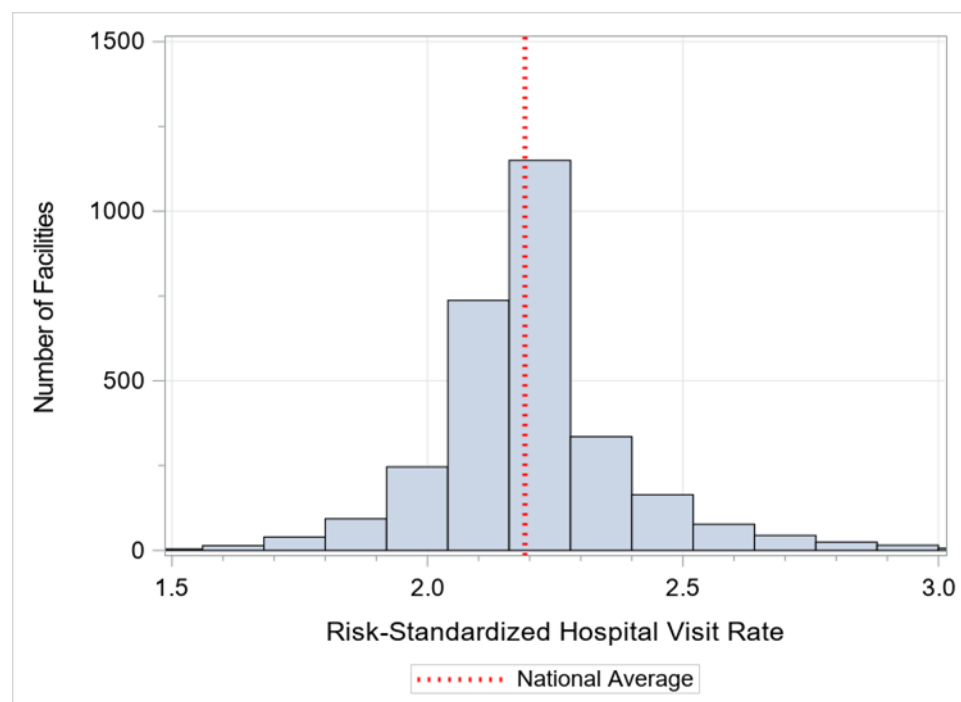
Note: SD=standard deviation

Table 6.3.3. Orthopedic Between-Facility Variance Among ASCs

Characteristic	1/1/2021-12/31/2022
Between-facility variance (SE)	0.062 (0.008)
Median OR	1.27

Note: SE=standard error

Figure 6.3.1. Distribution of Orthopedic Risk-Standardized Hospital Visit (RSHV) Rates for Ambulatory Surgical Centers (ASCs)



6.4. Distribution of Facilities by Performance Category

Table 6.4.1 displays performance category assignments for ASCs. Of 2,961 ASC facilities in the study cohort, eight performed “Better than the National Rate,” 1,809 performed “No Different than the National Rate,” and eight performed “Worse than the National Rate.” 1,136 were classified as “Number of Cases Too Small” (fewer than 30) to reliably tell how well the hospital is performing. The distribution of RSHVR scores can be used to compare and distinguish facility performance. Since orthopedic procedures at ASCs are elective and low risk, any corresponding hospital visit following orthopedic ASC procedures are unexpected, potentially preventable, and disruptive to patients.

Table 6.4.1. Orthopedic Facility Performance Category Distribution Among ASCs

Performance Category	ASCs	
	Number of facilities	% distribution
Better than the National Rate	8	0.27
No Different than the National Rate	1,809	61.09
Worse than the National Rate	8	0.27
Number of Cases Too Small	1,136	38.37

Note: Results based on July 1, 2021 – June 30, 2022 performance period

7. UROLOGY MEASURE FOR 2023 REPORTING

7.1. Background and Rationale for Urology Measure Updates

The measure aims to improve the quality of care delivered to patients undergoing outpatient urology procedures. The measure is reevaluated annually.

Importantly, the measurement period for 2023 public reporting returned to the typical 24 months in response to the COVID-19 public health emergency and CMS's decision to exclude claims data for January 1, 2020 – June 30, 2020 (Q1 and Q2 of 2020). CMS's decision to exclude this data under its ECE policy was done to assist healthcare providers who were directing their resources toward caring for patients and ensuring the health and safety of staff. For more information on the exclusion of claims data for Q1 and Q2 2020, please refer to the following CMS communications:

- <https://www.cms.gov/newsroom/press-releases/cms-announces-relief-clinicians-providers-hospitals-and-facilities-participating-quality-reporting>
- <https://www.cms.gov/files/document/guidance-memo-exceptions-and-extensions-quality-reporting-and-value-based-purchasing-programs.pdf>
- <https://qualitynet.cms.gov/files/5f0707a3b8112700239dca19?filename=2020-62-IP.pdf>
- https://qualitynet.cms.gov/files/5f6d198d4ac8370021c54179?filename=HQR_FAQs_092420.pdf

Section 7.2 below details the measure updates instituted during the measure reevaluation period and the impact of these updates on the measure cohort and outcome.

7.2. Measure Updates

7.2.1. Updates to Measure Code Sets

We made the following updates to the code set:

- Cohort Inclusion
 - The addition of Work RVU values for each cohort inclusion code
 - The addition of three CPT codes

The PAA v4.0_2022 was updated to PAA v4.0_2023. This change is detailed in Section 7.2.2.

7.2.2. Updates to the Planned Admission Algorithm

The urology measure outcome does not include planned inpatient admissions because they are not a signal of poor-quality care. The PAA excludes inpatient admissions occurring within two to seven days of the procedure if:

- The inpatient claim contains a procedure code or diagnosis that maps to the AHRQ CCS procedure or diagnosis category that is considered “always planned” (data dictionary tabs “PAA1 Always Plnnd Px” and “PAA2 Always Plnnd Dx”); or
- The inpatient claim contains a procedure code that maps to an AHRQ CCS procedure category that is considered “potentially planned” (data dictionary tab “PAA3 Pot Plnnd Px”), and the principal diagnosis on the claim is not in an AHRQ CCS diagnosis group or an individual ICD-10 code that is considered acute (data dictionary tab “PAA4 Acute Dx”).

We consider admissions occurring on the day of the procedure (Day 0) and Day 1 post-procedure as “unplanned” since the vast majority of these admissions directly follow procedure. ED visits and observation stays are never considered planned.

The urology measure PAA uses the same coding as the planned readmission algorithm developed for CMS’s hospital readmission measures. The planned readmission algorithm v4.0 is updated annually to reflect coding updates and clinical expert review, and the PAA for the urology measure is updated to align with the planned readmission algorithm.

For calendar year 2025 payment determination, the urology measure will adopt version 4.0_2023 of the planned readmission algorithm, which updates the v4.0_2022 version used in this report (identified in the data dictionary tables for potentially planned procedures and acute diagnoses). This section describes updates to v4.0_2023. [Appendix F](#) provides more detailed information on the algorithm.

Update to V4.0_2023:

In September 2019 and December 2020, the AHRQ HCUP released new versions of the CCS for ICD-10-CM and ICD-10-PCS codes, respectively, called the CCS-Refined (CCS-R). The magnitude of changes from the CCS beta versions to the CCS-R is extensive. Until comprehensive testing can be completed on the CCS-R, we will continue utilizing the existing beta version v2019.1 of the CCS for ICD-10-CM/PCS as the basis for the planned readmission algorithm specifications, updating it as appropriate with clinical expert input.

For current public reporting, we first reviewed the new ICD-10-CM and ICD-10-PCS codes in the FY 2022 code set to determine the most appropriate categorizations for the newly implemented ICD-10 codes, using the existing v2019.1 beta version of the CCS for ICD-10-CM/PCS.

We confirmed the clinical appropriateness of the CCS categorizations of the newly implemented ICD-10 codes in relation to the planned readmission algorithm, and whether any changes were warranted. This led to the following changes in the algorithm:

- Potentially planned procedures:
 - The addition of new ICD-10-PCS codes (associated with AHRQ CCS procedure categories 48 and 49) to the singular ICD-10-PCS code list.
- Acute diagnoses:
 - The removal of ICD-10-CM codes (associated with AHRQ CCS diagnosis categories 237 and 661) from the singular ICD-10-CM code list;
 - The addition of whole CCS 237 and 661, and the addition of ICD-10-CM codes (associated with AHRQ CCS diagnosis categories 155, 233, 238, 253, and 662).
 - The revision of 13 ICD-10-CM code descriptions.

The complete set of codes reflected in the v4.0_2023 planned readmission algorithm adopted as the PAA for the urology measure are available in the data dictionary tabs *“PAA1 Always Plnnd Px,” “PAA2 Always Plnnd Dx,” “PAA3 Pot Plnnd Px,”* and *“PAA4 Acute Dx.”*

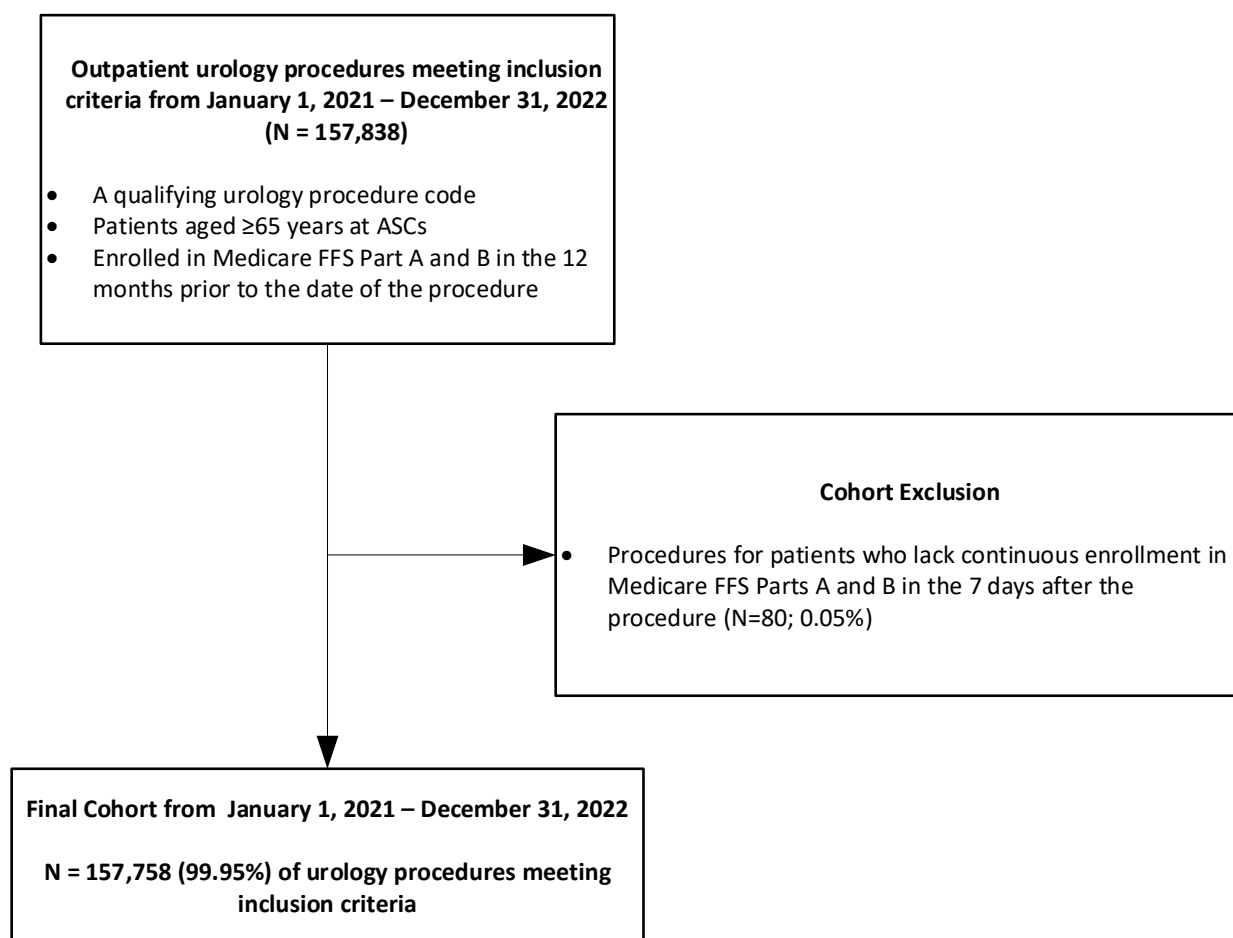
8. SUMMARY OF UROLOGY MEASURE PERFORMANCE

This section presents information on the frequency and effect of model risk factors, model performance, facility-level urology procedure volume, and risk-standardized rates across facilities after incorporating the changes described in [Section 7](#). All analyses were performed in data from the January 1, 2021–December 31, 2022 performance period.

8.1. Final ASC Urology Cohort

[Figure 8.1.1](#) illustrates the final cohort using the January 1, 2021 – December 31, 2022 performance period. data after applying all updates to inclusion and exclusion criteria described in [Section 7](#).

Figure 8.1.1. ASC Urology Cohort



8.2. Urology Model Parameters and Performance

We computed two summary statistics to assess model performance: the predictive ability and the area under the ROC curve c-statistic. To test model predictive ability, we

plotted observed hospital visit rates from the lowest to the highest risk deciles based on predicted hospital visit probabilities. The c-statistic is an indicator of the model's discriminant ability or ability to correctly classify those who did and did not have an unplanned hospital visit within seven days of the urology procedure. Potential values range from 0.5, meaning no better than chance, to 1.0, meaning perfect discrimination. A c-statistic of 1.0 indicates perfect prediction, implying patients' outcomes can be predicted completely by their risk factors, and physicians and facilities play no role in patients' outcomes. The frequency of model risk factors and model parameters and performance are presented in this section, [Section 8.2](#). In [Section 8.3](#), we present the distributions of urology procedure volumes and risk-standardized hospital visit rates across facilities.

[Table 8.2.1](#) shows the frequency of risk factors used in the risk-adjustment model. [Table 8.2.2](#) presents the corresponding ORs and 95% CIs from the hierarchical logistic regression model. [Table 8.2.3](#) presents the urology model performance values.

Please note that, due to seasonal fluctuations, a truncated look-back period for risk adjustment in response to CMS's ECE policy, and other factors, the statistics from the first time period (January 1, 2021 – December 31, 2021) that are presented in the tables within this section are not directly comparable to the other time period.

Table 8.2.1. Frequency of Urology Model Risk Factors Among ASCs over Different Time Periods

Risk Factor (% unless otherwise indicated)	1/1/2021-12/31/2021	1/1/2022-12/31/2022	1/1/2021-12/31/2022
Total N	79,637	78,121	157,758
Age (years above 65): mean (SD)	9.91 (6.36)	10.07 (6.34)	9.99 (6.35)
Work Relative Value Units (work RVUs): mean (SD)	6.15 (3.46)	6.17 (3.44)	6.16 (3.45)
Benign prostatic hyperplasia with obstruction	28.15	30.24	29.19
Complications of specified implanted device or graft (CC 176)	4.70	5.08	4.89
Number of qualifying procedures: 1	88.82	90.25	89.53
Number of qualifying procedures: 2	10.26	8.94	9.61
Number of qualifying procedures: 3 or more	0.92	0.81	0.86
Poisonings and inflammatory allergic reactions (CC 175)	4.01	4.31	4.16
Major symptoms, abnormalities (CC 178)	59.84	64.32	62.06
Parkinson's and Huntington's diseases; seizure disorders and convulsions (CC 78, 79)	3.08	3.48	3.28
Ischemic heart disease (CC 86, 87, 88, 89)	25.13	27.63	26.37

Notes: CC-related risk factors are defined by v24 of CC map.

Table 8.2.2. Adjusted ORs and 95% CIs for the Urology Logistic Regression Model Among ASCs over Different Time Periods

Risk Factor (% unless otherwise indicated)	1/1/2021-12/31/2021	1/1/2022-12/31/2022	1/1/2021-12/31/2022
Age (years above 65)	1.03 (1.02-1.03)	1.02 (1.02-1.03)	1.03 (1.02-1.03)
Work Relative Value Units	1.07 (1.06-1.08)	1.07 (1.06-1.08)	1.07 (1.07-1.08)
Benign prostatic hyperplasia with obstruction	1.25 (1.17-1.34)	1.25 (1.16-1.34)	1.25 (1.19-1.31)
Complications of specified implanted device or graft (CC 176)	1.50 (1.33-1.70)	1.42 (1.25-1.60)	1.46 (1.34-1.59)
Number of qualifying procedures: 1	Reference	Reference	Reference
Number of qualifying procedures: 2 vs 1	1.06 (0.95-1.18)	1.06 (0.95-1.19)	1.06 (0.98-1.15)
Number of qualifying procedures: 3 or more vs 1	1.16 (0.96-1.39)	1.16 (0.95-1.41)	1.16 (1.01-1.32)
Poisonings and inflammatory allergic reactions (CC 175)	1.38 (1.20-1.58)	1.23 (1.07-1.42)	1.30 (1.18-1.44)
Major symptoms, abnormalities (CC 178)	1.24 (1.16-1.33)	1.21 (1.13-1.30)	1.22 (1.17-1.29)
Parkinson's and Huntington's diseases; seizure disorders and convulsions (CC 78, 79)	1.26 (1.07-1.48)	1.28 (1.10-1.50)	1.27 (1.13-1.42)
Ischemic heart disease (CC 86, 87, 88, 89)	1.28 (1.19-1.37)	1.29 (1.20-1.38)	1.28 (1.22-1.35)

Notes: CC-related risk factors are defined by v24 of CC map.

OR=Odds ratio; CI=Confidence interval

Table 8.2.3. Urology Logistic Regression Model Performance Among ASCs over Different Time Periods

Characteristic	1/1/2021-12/31/2021	1/1/2022-12/31/2022	1/1/2021-12/31/2022
Predictive ability, % (lowest decile – highest decile)	2.69 – 9.93	2.73 – 9.71	2.71 – 9.81
c-statistic	0.617	0.613	0.615

8.3. Distribution of Facility-Level Measure Score

Table 8.3.1 presents the number of index urology procedures. There were 1,086 ASCs with at least one qualifying index urology procedure in the 2023 data. The median number of qualifying procedures for ASCs was 39 (IQR = 7 – 148).

Table 8.3.2 shows the mean and median RSHV rates. The median ASC RSHV rate was 5.10 hospital visits per 100 procedures (IQR = 4.91 – 5.35). Figure 8.3.1 shows the overall distribution of RSHV rates for ASCs.

Finally, Table 8.3.3 presents the between-facility variance and median OR. Between-facility variance for ASCs was 0.063 (SE = 0.010). If there were no systematic differences between facilities, the between-facility variances would be 0. The median OR represents the median increase in odds of a hospital visit if a procedure on a single patient was performed at a higher-risk facility compared to a lower-risk facility. The estimated median ORs suggest a meaningful increase in the risk of a hospital visit if a procedure was performed at a higher risk facility compared to a lower risk facility. For ASCs, an OR value of 1.27 indicates that a patient has an 27% increase in the odds of a hospital visit if the same procedure was performed at a higher risk ASC compared to a lower risk ASC.

Table 8.3.1. Distribution of Urology Cohort Volumes Among ASCs over Different Time Periods

Characteristic	1/1/2021-12/31/2021	1/1/2022-12/31/2022	1/1/2021-12/31/2022
Number of facilities	974	963	1,086
Mean number of procedures (SD)	81.76 (152.65)	81.12 (151.44)	145.27 (289.16)
Range (min – max)	1 – 1,609	1 – 1,498	1 – 3,107
25th percentile	6	6	7
50th percentile (median)	26	25	39
75th percentile	84	84	148

Table 8.3.2. Distribution of Urology Risk-Standardized Hospital Visit (RSHV) Rates Among ASCs

Characteristic	1/1/2021-12/31/2022
Number of facilities	1,086
Mean RSHV rate (SD)	5.16 (0.56)
Range (min – max)	2.94 – 8.85
25th percentile	4.91
50th percentile (median)	5.10
75th percentile	5.35

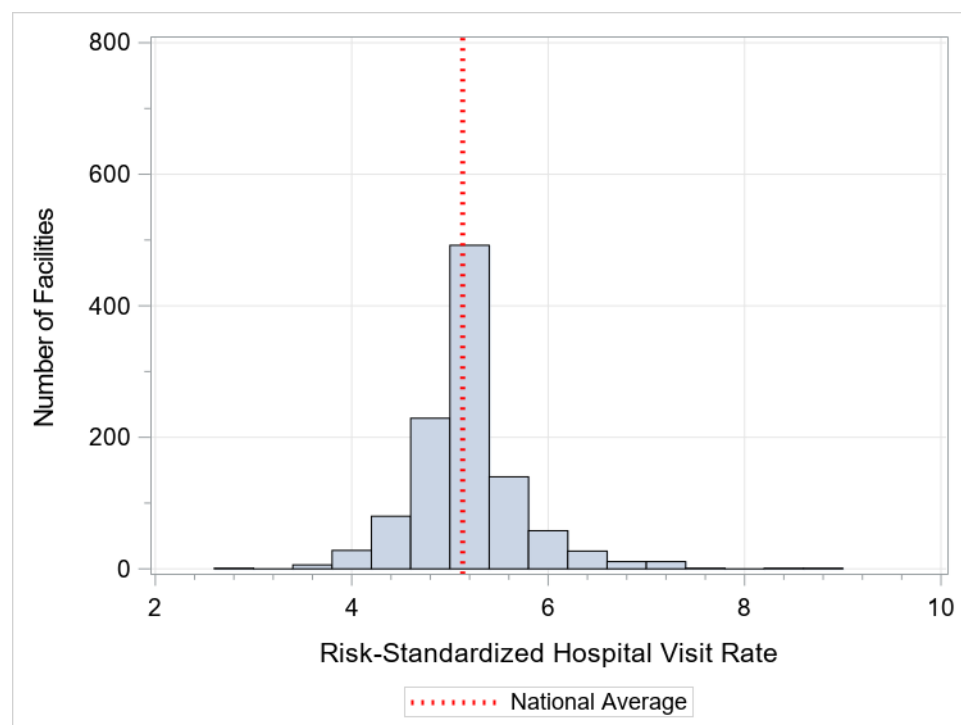
Note: SD=standard deviation

Table 8.3.3. Urology Between-Facility Variance Among ASCs

Characteristic	1/1/2021-12/31/2022
Between-facility variance (SE)	0.063 (0.010)
Median OR	1.27

Note: SE=standard error

Figure 8.3.1. Distribution of Urology Risk-Standardized Hospital Visit (RSHV) Rates for Ambulatory Surgical Centers (ASCs)



8.4. Distribution of Facilities by Performance Category

Table 8.4.1 displays performance category assignments to ASCs. Of 1,086 ASC facilities in the study cohort, 6 performed “Better than the National Rate,” 591 performed “No Different than the National Rate,” and 14 performed “Worse than the National Rate.” 475 were classified as “Number of Cases Too Small” (fewer than 30) to reliably tell how well the hospital is performing.

Table 8.4.1. Urology Facility Performance Category Distribution Among ASCs

Performance Category	ASCs	
	Number of facilities	% distribution
Better than the National Rate	6	0.55
No Different than the National Rate	591	54.42
Worse than the National Rate	14	1.29
Number of Cases Too Small	475	43.74

Note: Results based on July 1, 2021 – June 30, 2022 performance period

9. UPDATES TO COLONOSCOPY MEASURE FOR 2023 REPORTING

9.1. Background and Rationale for Colonoscopy Measure Updates

The measure aims to improve the quality of care delivered to patients undergoing outpatient colonoscopy procedures. The measure is reevaluated annually.

Importantly, the measurement period for 2023 public reporting was reduced to approximately 30 months (from the typical 36 months) in response to the COVID-19 public health emergency and CMS's decision to exclude claims data for January 1, 2020 - June 30, 2020 (Q1 and Q2 of 2020). CMS's decision to exclude this data under its ECE policy was done to assist healthcare providers who were directing their resources toward caring for patients and ensuring the health and safety of staff. For more information on the exclusion of claims data for Q1 and Q2 2020, please refer to the following CMS communications:

- <https://www.cms.gov/newsroom/press-releases/cms-announces-relief-clinicians-providers-hospitals-and-facilities-participating-quality-reporting>
- <https://www.cms.gov/files/document/guidance-memo-exceptions-and-extensions-quality-reporting-and-value-based-purchasing-programs.pdf>
- <https://qualitynet.cms.gov/files/5f0707a3b8112700239dca19?filename=2020-62-IP.pdf>
- https://qualitynet.cms.gov/files/5f6d198d4ac8370021c54179?filename=HQR_FAQs_092420.pdf

Section 9.2 below details the measure updates instituted during the measure reevaluation period and the impact of these updates on the measure cohort and outcome.

Note: The actual FSRs may differ slightly due to logic changes that will be adopted in future versions of the measure.

9.2. Measure Updates

9.2.1. Updates to Measure Code Sets

There were no identified ICD-10 coding updates for the cohort or risk factors. The PAA v4.0_2022 was updated to PAA v4.0_2023. This change is detailed in Section 9.2.2.

9.2.2. Updates to the Planned Admission Algorithm

The colonoscopy measure outcome does not include planned inpatient admissions because they are not a signal of poor-quality care. The PAA excludes inpatient admissions if:

- The inpatient claim contains a procedure code or diagnosis that maps to the AHRQ CCS procedure or diagnosis category that is considered “always planned” (data dictionary tabs “*Colon PAA1 Always Plnnd Px*” and “*Colon PAA2 Always Plnnd Dx*”); or
- The inpatient claim contains a procedure code that maps to an AHRQ CCS procedure category that is considered “potentially planned” (data dictionary tab “*Colon PAA3 Pot Plnnd Px*”), and the principal diagnosis on the claim is not in an AHRQ CCS diagnosis group or an individual ICD-10 code that is considered acute (data dictionary tab “*Colon PAA4 Acute Dx*”).

We consider admissions occurring on the day of the colonoscopy (Day 0) and Day 1 post-colonoscopy as “unplanned” since the vast majority of these admissions directly follow procedure. ED visits and observation stays are never considered planned.

The colonoscopy measure PAA uses the same coding as the planned readmission algorithm developed for CMS’s hospital readmission measures. The planned readmission algorithm v4.0 is updated annually to reflect coding updates and clinical expert review, and the PAA for the colonoscopy measure is updated to align with the planned readmission algorithm.

For calendar year 2025 payment determination, the colonoscopy measure will adopt version 4.0_2023 of the planned readmission algorithm, which updates the v4.0_2022 version used in this report (identified in the data dictionary tables for potentially planned procedures and acute diagnoses). This section describes updates to v4.0_2023. [Appendix F](#) provides more detailed information on the algorithm.

Update to V4.0_2023:

In September 2019 and December 2020, the AHRQ HCUP released new versions of the CCS for ICD-10-CM and ICD-10-PCS codes, respectively, called the CCS-R. The magnitude of changes from the CCS beta versions to the CCS-R is extensive. Until comprehensive testing can be completed on the CCS-R, we will continue utilizing the existing beta version v2019.1 of the CCS for ICD-10-CM/PCS as the basis for the planned readmission algorithm specifications, updating it as appropriate with clinical expert input.

For current public reporting, we first reviewed the new ICD-10-CM and ICD-10-PCS codes in the FY 2022 code set to determine the most appropriate categorizations for the newly implemented ICD-10 codes, using the existing v2019.1 beta version of the CCS for ICD-10-CM/PCS.

We confirmed the clinical appropriateness of the CCS categorizations of the newly implemented ICD-10 codes in relation to the planned readmission algorithm, and whether any changes were warranted. This led to the following changes in the algorithm:

- Potentially planned procedures:
 - The addition of new ICD-10-PCS codes (associated with AHRQ CCS procedure categories 48 and 49) to the singular ICD-10-PCS code list.
- Acute diagnoses:
 - The removal of ICD-10-CM codes (associated with AHRQ CCS diagnosis categories 237 and 661) from the singular ICD-10-CM code list;
 - The addition of whole 237 and 661, and the addition of ICD-10-CM codes (associated with AHRQ CCS diagnosis categories 155, 233, 238, 253, and 662).
 - The revision of 13 ICD-10-CM code descriptions.

Analyses of the changes to the planned readmission algorithm specifications suggest minimal impact to readmission measure rates.

The complete set of codes reflected in the v4.0_2023 planned readmission algorithm adopted as the PAA for the colonoscopy measure are available in the data dictionary tabs “Colon PAA1 Always Plnnd Px,” “Colon PAA2 Always Plnnd Dx,” “Colon PAA3 Pot Plnnd Px,” and “Colon PAA4 Acute Dx.”

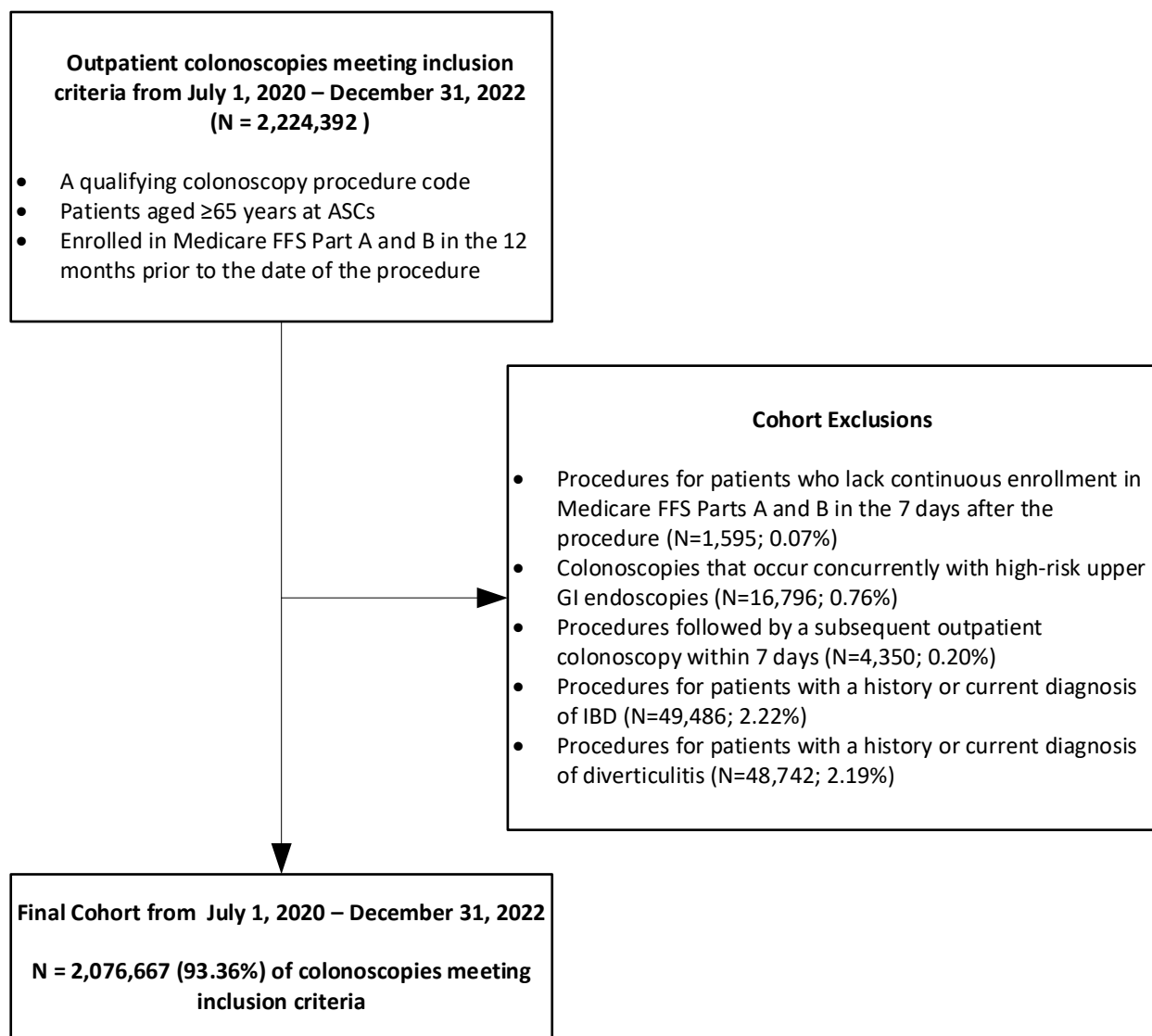
10. SUMMARY OF COLONOSCOPY MEASURE PERFORMANCE AFTER UPDATES

This section presents updated information on the frequency and effect of model risk factors, model performance, facility-level colonoscopy volume, and risk-standardized rates across facilities after incorporating the changes described in [Section 9](#). All analyses were performed in data from the July 1, 2020 –December 31, 2022 performance period.

10.1. Final ASC Colonoscopy Cohort

[Figure 10.1.1](#) illustrates the final cohort using the July 1, 2020 – December 31, 2022 performance period data after applying all updates to inclusion and exclusion criteria described in [Section 9](#).

Figure 10.1.1. ASC Colonoscopy Cohort



10.2. Colonoscopy Model Parameters and Performance

We computed two summary statistics to assess model performance: the predictive ability and the area under the ROC curve c-statistic. To test model predictive ability, we calculated observed hospital visit rates in the lowest and highest deciles based on predicted hospital visit probabilities. The c-statistic is an indicator of the model's discriminant ability or ability to correctly classify those who did and did not have an unplanned hospital visit within seven days of the colonoscopy. Potential values range from 0.5, meaning no better than chance, to 1.0, meaning perfect discrimination. A c-statistic of 1.0 indicates perfect prediction, implying patients' outcomes can be predicted completely by their risk factors, and physicians and facilities play no role in patients' outcomes. The frequency of model risk factors and model parameters and performance are presented in this section, [Section 10.2](#). In [Section 10.3](#), we present the distributions of colonoscopy procedure volumes and risk-standardized hospital visit rates across facilities.

[Table 10.2.1](#) shows the frequency of risk factors used in the risk-adjustment model. [Table 10.2.2](#) presents the corresponding ORs and 95% CIs from the hierarchical logistic regression model. [Table 10.2.3](#) presents the colonoscopy model performance values.

Please note that, due to seasonal fluctuations, a truncated look-back period for risk adjustment in response to CMS's ECE policy, and other factors, the statistics from the first and shorter time period (July 1, 2020 – December 31, 2020) that are presented in the tables within this section are not directly comparable to the other two time periods.

Table 10.2.1. Frequency of Colonoscopy Model Risk Factors Among ASCs over Different Time Periods

Risk Factor (% unless otherwise indicated)	7/1/2020-12/31/2020	1/1/2021-12/31/2021	1/1/2022-12/31/2022	7/1/2020-12/31/2022
Total N	401,746	829,627	845,294	2,076,667
Age 65-69	32.97	32.38	31.69	32.21
Age 70-74	37.69	38.35	37.89	38.03
Age 75-79	20.95	21.11	22.43	21.62
Age 80-84	6.86	6.74	6.71	6.75
Age 85+	1.54	1.42	1.29	1.39
Endoscopy during Procedure	19.18	19.43	18.69	19.08
Polypectomy during Procedure	43.46	43.97	45.43	44.47
Metastatic Cancer (CC 8-11)	6.07	6.76	7.50	6.93
Disorders of Fluid, Electrolyte, Acid Base (CC 24)	4.19	6.38	7.11	6.25
Liver Disease (CC 27-32)	4.90	6.98	7.58	6.82
Iron Deficiency Anemia (CC 49)	14.54	18.36	19.70	18.17

Risk Factor (% unless otherwise indicated)	7/1/2020-12/31/2020	1/1/2021-12/31/2021	1/1/2022-12/31/2022	7/1/2020-12/31/2022
Substance Abuse (CC 54-56, 202-203)	3.22	4.43	4.91	4.39
Psychiatric Disorders (CC 57-59, 61-63)	10.79	13.98	15.77	14.09
Congestive Heart Failure (CC 85)	3.53	4.89	5.29	4.79
Ischemic Heart Disease (CC 86-89)	12.19	16.20	18.01	16.16
Arrhythmia (CC 96-97)	10.79	14.25	15.84	14.23
Stroke/Transient Ischemic Attack (TIA) (CC 99-101)	4.46	6.55	7.23	6.42
Chronic Lung Disease (CC 111-113)	8.70	11.11	12.04	11.02
Pneumonia (CC 114-116)	1.59	2.26	2.36	2.17

Notes: CC-related risk factors are defined by v24 of CC map.

Table 10.2.2. Adjusted ORs and 95% CIs for the Colonoscopy Logistic Regression Model Among ASCs over Different Time Periods

Variable (CC)	7/1/2020-12/31/2020	1/1/2021-12/31/2021	1/1/2022-12/31/2022	7/1/2020-12/31/2022
Endoscopy during Procedure	1.37 (1.27-1.47)	1.30 (1.23-1.36)	1.31 (1.25-1.38)	1.32 (1.28-1.36)
Polypectomy during Procedure	1.18 (1.11-1.26)	1.21 (1.16-1.26)	1.16 (1.11-1.21)	1.18 (1.15-1.21)
Metastatic Cancer (CC 8-11)	1.22 (1.09-1.37)	1.09 (1.01-1.17)	1.12 (1.04-1.21)	1.12 (1.07-1.18)
Disorders of Fluid, Electrolyte, Acid Base (CC 24)	1.44 (1.28-1.62)	1.39 (1.30-1.50)	1.49 (1.40-1.60)	1.44 (1.38-1.51)
Liver Disease (CC 27-32)	1.26 (1.11-1.42)	1.24 (1.16-1.34)	1.25 (1.17-1.34)	1.24 (1.19-1.30)
Iron Deficiency Anemia (CC 49)	1.24 (1.14-1.34)	1.25 (1.19-1.32)	1.24 (1.18-1.30)	1.24 (1.20-1.28)
Substance Abuse (CC 54-56, 202-203)	1.32 (1.15-1.52)	1.25 (1.15-1.36)	1.28 (1.18-1.39)	1.27 (1.20-1.34)
Psychiatric Disorders (CC 57-59, 61-63)	1.35 (1.23-1.47)	1.38 (1.30-1.46)	1.38 (1.31-1.45)	1.37 (1.32-1.42)
Congestive Heart Failure (CC 85)	1.28 (1.12-1.46)	1.29 (1.19-1.39)	1.27 (1.18-1.37)	1.28 (1.21-1.34)
Ischemic Heart Disease (CC 86-89)	1.27 (1.16-1.38)	1.21 (1.14-1.27)	1.22 (1.16-1.28)	1.22 (1.17-1.26)
Stroke/Transient Ischemic Attack (TIA) (CC 99-101)	1.07 (0.94-1.22)	1.13 (1.05-1.22)	1.16 (1.08-1.25)	1.13 (1.08-1.19)
Chronic Lung Disease (CC 111-113)	1.44 (1.31-1.58)	1.26 (1.19-1.34)	1.28 (1.21-1.36)	1.29 (1.24-1.34)
Pneumonia (CC 114-116)	1.19 (0.99-1.43)	1.30 (1.17-1.44)	1.25 (1.13-1.39)	1.26 (1.18-1.35)

Variable (CC)	7/1/2020-12/31/2020	1/1/2021-12/31/2021	1/1/2022-12/31/2022	7/1/2020-12/31/2022
Arrhythmia (CC 96-97)	1.37 (1.14-1.66)	1.40 (1.25-1.58)	1.39 (1.25-1.56)	1.39 (1.29-1.50)
With Arrhythmia: Age 70-74 v. Age 65-69	1.01 (0.80-1.26)	1.04 (0.92-1.19)	1.03 (0.91-1.17)	1.03 (0.95-1.12)
With Arrhythmia: Age 75-79 v. Age 65-69	1.22 (0.98-1.53)	1.20 (1.05-1.37)	1.10 (0.97-1.25)	1.16 (1.06-1.26)
With Arrhythmia: Age 80-84 v. Age 65-69	1.68 (1.31-2.16)	1.56 (1.34-1.82)	1.48 (1.28-1.72)	1.55 (1.40-1.70)
With Arrhythmia: Age 85+ v. Age 65-69	1.97 (1.40-2.76)	1.80 (1.45-2.24)	2.13 (1.74-2.61)	1.97 (1.72-2.26)
Without Arrhythmia: Age 70-74 v. Age 65-69	1.11 (1.01-1.21)	1.09 (1.03-1.16)	1.08 (1.01-1.15)	1.09 (1.05-1.13)
Without Arrhythmia: Age 75-79 v. Age 65-69	1.31 (1.19-1.45)	1.23 (1.14-1.31)	1.23 (1.15-1.32)	1.25 (1.19-1.30)
Without Arrhythmia: Age 80-84 v. Age 65-69	1.64 (1.44-1.88)	1.84 (1.68-2.02)	1.64 (1.49-1.81)	1.72 (1.62-1.83)
Without Arrhythmia: Age 85+ v. Age 65-69	1.85 (1.46-2.36)	2.28 (1.93-2.69)	1.93 (1.61-2.33)	2.06 (1.85-2.30)

Notes: CC-related risk factors are defined by v24 of CC map.

OR=Odds ratio; CI=Confidence interval

Table 10.2.3. Colonoscopy Logistic Regression Model Performance Among ASCs over Different Time Periods

Characteristic	7/1/2020-12/31/2020	1/1/2021-12/31/2021	1/1/2022-12/31/2022	7/1/2020-12/31/2022
Predictive ability, % (lowest decile – highest decile)	0.54 – 2.24	0.53 – 2.39	0.52 – 2.39	0.53 – 2.35
c-statistic	0.632	0.638	0.642	0.638

10.3. Distribution of Facility-Level Measure Score

Table 10.3.1 presents the number of index colonoscopies. There were 2,152 ASCs with at least one qualifying index colonoscopy in the 2023 data. The median number of qualifying procedures for ASCs was 588 (IQR = 159 – 1,384).

Table 10.3.2 shows the mean and median RSHV rates. The median ASC RSHV rate was 9.85 hospital visits per 1,000 colonoscopies (IQR = 9.42 – 10.37). Figure 10.3.1 shows the overall distribution of RSHV rates for ASCs.

Finally, Table 10.3.3 presents the between-facility variance and median OR. Between-facility variance for ASCs was 0.040 (SE = 0.005). If there were no systematic differences

between facilities, the between-facility variances would be 0. The median OR represents the median increase in odds of a hospital visit if a procedure on a single patient was performed at a higher-risk facility compared to a lower-risk facility. The estimated median ORs suggest a meaningful increase in the risk of a hospital visit if a procedure was performed at a higher risk facility compared to a lower risk facility. For ASCs, an OR value of 1.21 indicates that a patient has an 21% increase in the odds of a hospital visit if the same procedure was performed at a higher risk ASC compared to a lower risk ASC.

Table 10.3.1. Distribution of Colonoscopy Cohort Volumes Among ASCs over Different Time Periods

Characteristic	7/1/2020-12/31/2020	1/1/2021-12/31/2021	1/1/2022-12/31/2022	7/1/2020-12/31/2022
Number of facilities	1,962	2,021	2,000	2,152
Mean number of colonoscopies (SD)	204.76 (222.78)	410.50 (453.00)	422.65 (462.16)	964.99 (1116.11)
Range (min – max)	1 – 2,692	1 – 5,244	1 – 5,365	1 – 13,301
25th percentile	45	83	89	159
50th percentile (median)	134	264	270	588
75th percentile	294	591	600	1,384

Table 10.3.2. Distribution of Colonoscopy Risk-Standardized Hospital Visit (RSHV) Rates Among ASCs per 1,000 Colonoscopies

Characteristic	7/1/2020-12/31/2022
Number of facilities	2,152
Mean RSHV rate (SD)	9.92 (0.92)
Range (min – max)	6.29 – 14.16
25th percentile	9.42
50th percentile (median)	9.85
75th percentile	10.37

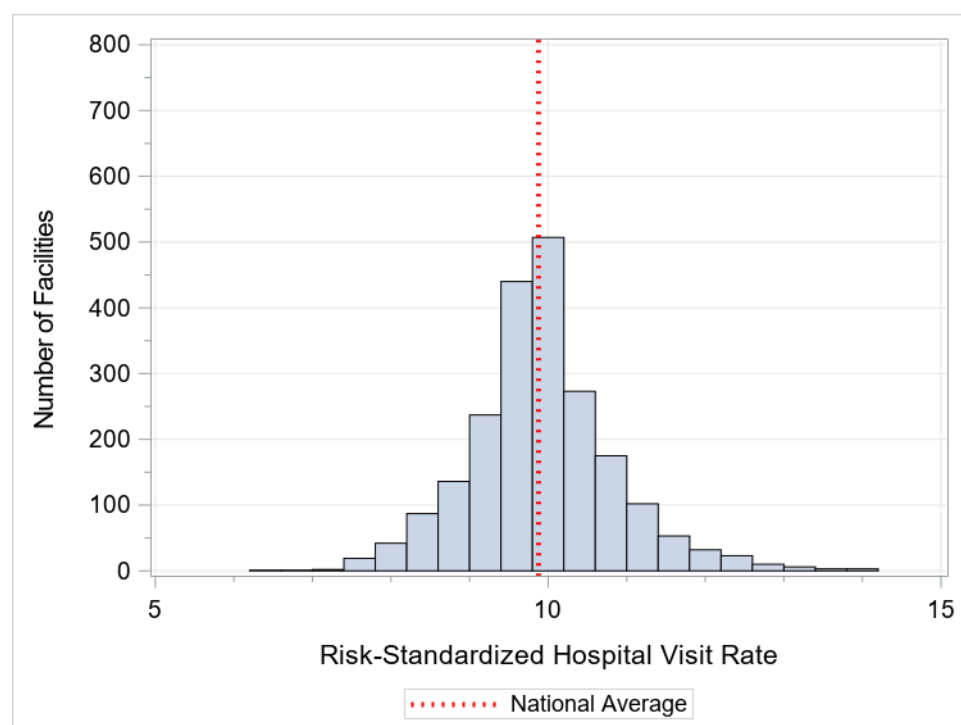
Note: SD=standard deviation

Table 10.3.3. Colonoscopy Between-Facility Variance Among ASCs

Characteristic	7/1/2020-12/31/2022
Between-facility variance (SE)	0.040 (0.005)
Median OR	1.21

Note: SE=standard error

Figure 10.3.1. Distribution of Colonoscopy Risk-Standardized Hospital Visit (RSHV) Rates for Ambulatory Surgical Centers (ASCs)



Note: Results based on July 1, 2020 – December 31, 2022 performance period

10.4. Distribution of Facilities by Performance Category

Table 10.4.1 displays performance category assignments to ASCs. Of 2,152 ASC facilities in the study cohort, eight performed “Better than the National Rate,” 1,931 performed “No Different than the National Rate,” and nine performed “Worse than the National Rate.” 204 were classified as “Number of Cases Too Small” (fewer than 30) to reliably tell how well the hospital is performing.

Table 10.4.1. Colonoscopy Facility Performance Category Distribution Among ASCs

Performance Category	ASCs	
	Number of facilities	% distribution
Better than the National Rate	8	0.37
No Different than the National Rate	1,931	89.73
Worse than the National Rate	9	0.42
Number of Cases Too Small	204	9.48

Note: Results based on July 1, 2020 – December 31, 2022 performance period

11. GLOSSARY

Case mix: The comorbidity profile and age characteristics of patients with index procedures at a given facility.

Cohort: The index procedures used to calculate the measure after inclusion and exclusion criteria have been applied.

Complications: Medical conditions that likely occurred because of care rendered during the index procedure.

Comorbidities: Medical conditions that the patient had in addition to his/her primary reason for receiving a colonoscopy.

Condition Categories (CCs): Groupings of diagnosis codes in clinically relevant categories, from the Hierarchical Condition Categories (HCCs) system. The measure uses the grouping but not the hierarchical logic of the system to create risk factor variables. Description of the CCs can be found at http://www.cms.hhs.gov/Reports/downloads/pope_2000_2.pdf.

Expected unplanned hospital visits: The number of unplanned hospital visits within seven days of the procedure the facility is expected to have based on average facility performance with a given facility's case mix. The denominator in the risk-standardized hospital visit rate.

Hierarchical logistic regression model: A class of generalized linear models for clustered data. The model not only considers patient risk factors, but also estimates a facility-specific effect, an estimate of the additional impact a facility has on the log odds of having a hospital visit.

Facility-specific intercept: A measure of the facility quality of care calculated based on the facility's actual hospital visit rate relative to facilities with similar patients, considering how many patients it served, its patients' risk factors, and how many experienced a subsequent unplanned hospital visit. The facility-specific effect will be negative for a better-than-average facility, positive for a worse-than-average facility, and close to zero for an average facility. The facility-specific effect is used in the numerator to calculate "predicted" hospital visits.

Index colonoscopy: Any colonoscopy included in the measure calculation as the procedure to which the outcome is attributed.

Medicare fee-for-service (FFS): Original Medicare plan in which providers receive a fee or payment for each individual service provided directly from Medicare. All services rendered are unbundled and paid for separately. Only beneficiaries in Medicare FFS, not in managed care (Medicare Advantage), are included in the measure.

National observed seven-day unplanned hospital visit rate: All included procedures with the outcome divided by all included procedures.

Outcome: The result of a broad set of healthcare activities that affect patients' well-being. For this measure, the outcome is hospital visit (ED visit, observation stay, or inpatient admission) within seven days of the index procedure.

Planned hospital visit: A hospital visit within seven days of the index procedure that is a scheduled part of the patient's plan of care. Planned hospital visits are not counted as outcomes in this measure.

Predicted hospital visits: The number of unplanned hospital visits within seven days of the procedure that the facility is predicted to have, accounting for its observed unplanned hospital visit rate and its case mix. The numerator in the risk-standardized hospital visit rate.

Procedure category: A group of related procedure codes, as grouped by the Agency for Healthcare Research and Quality (AHRQ) Clinical Classifications Software (CCS).

Risk-adjustment variables: Patient demographics and comorbidities used to standardize rates for differences in case mix across facilities.

Unplanned hospital visits: Acute clinical events a patient experiences that require urgent hospital visits. Unplanned hospital visits are counted as outcomes in the measure.

12. REFERENCES

1. Ranasinghe I, Parzynski CS, Searfoss R, et al. Differences in Colonoscopy Quality Among Facilities: Development of a Post-Colonoscopy Risk-Standardized Rate of Unplanned Hospital Visits. *Gastroenterology*. 2016;150(1):103-113.
2. Cullen KA, Hall MJ, Golosinskiy A. Ambulatory surgery in the United States, 2006. *Natl Health Stat Report*. 2009(11):1-25.
3. HCUP CCS-Services and Procedures. Healthcare Cost and Utilization Project (HCUP). Agency for Healthcare Research and Quality, Rockville, MD. May 2021; https://www.hcup-us.ahrq.gov/toolssoftware/ccs_svcsproc/ccssvcproc.jsp. Accessed August 25, 2023.
4. Fleisher LA, Pasternak LR, Herbert R, Anderson GF. Inpatient hospital admission and death after outpatient surgery in elderly patients: importance of patient and system characteristics and location of care. *Arch Surg*. 2004;139(1):67-72.
5. Mattila K, Toivonen J, Janhunen L, Rosenberg PH, Hynynen M. Postdischarge symptoms after ambulatory surgery: first-week incidence, intensity, and risk factors. *Anesth Analg*. 2005;101(6):1643-1650.
6. Orosco RK, Lin HW, Bhattacharyya N. Ambulatory thyroidectomy: a multistate study of revisits and complications. *Otolaryngol Head Neck Surg*. 2015;152(6):1017-1023.
7. Rabeneck L, Saskin R, Paszat LF. Onset and clinical course of bleeding and perforation after outpatient colonoscopy: a population-based study. *Gastrointest Endosc*. 2011;73(3):520-523.
8. Horwitz LI, Grady JN, Cohen DB, et al. Development and Validation of an Algorithm to Identify Planned Readmissions From Claims Data. *J Hosp Med*. 2015;10(10):670-677.

13. APPENDICES

Appendix A: Statistical Approach to Calculating Risk-Standardized Hospital Visit Rate

We fitted a hierarchical generalized linear model (HGLM), which accounts for the clustering of observations within hospitals. We assume the outcome is a known exponential family distribution and relates linearly to the covariates via a known link function, h . For our model, we assumed a binomial distribution and a logit link function. Further, we accounted for the clustering within hospital by estimating a hospital-specific effect, α_i which we assume follows a normal distribution with mean μ and variance τ^2 , the between-hospital variance component. The following equations define the HGLM:

$$(1) \quad h\left(\Pr(Y_{ij} = 1 | \mathbf{Z}_{ij}, \omega_i)\right) = \log\left(\frac{\Pr(Y_{ij} = 1 | \mathbf{Z}_{ij}, \omega_i)}{1 - \Pr(Y_{ij} = 1 | \mathbf{Z}_{ij}, \omega_i)}\right) = \alpha_i + \beta \mathbf{Z}_{ij}$$

$$\text{where } \alpha_i = \mu + \omega_i; \omega_i \sim N(0, \tau^2)$$

$$i = 1 \dots I; j = 1 \dots n_i$$

Where Y_{ij} denotes the outcome (equal to one if patient has one or more qualifying hospital visit within seven days of procedure, zero otherwise) for the j -th patient who had an procedures at the i -th facility; $\mathbf{Z}_{ij} = (Z_{1ij}, Z_{2ij}, \dots, Z_{pij})$ is a set of p patient-specific covariates derived from the data; and I denotes the total number of facilities and n_i is the number of procedures performed at facility i . The facility-specific intercept, or effect, of the i -th facility, α_i , defined above, comprises μ , the adjusted average intercept over all facilities in the sample, and ω_i , the facility-specific intercept deviation from μ . A point estimate of ω_i , greater or less than 0, determines whether facility performance is worse or better compared to the adjusted average outcome.

The HGLM is estimated using the SAS software system (GLIMMIX procedure).

Provider Performance Reporting

Using the HGLM defined by Equation (1), we estimate the parameters $\hat{\mu}$, $(\hat{a}_1, \hat{a}_2, \dots, \hat{a}_l)$, $\hat{\beta}$, and $\hat{\tau}^2$. We calculate a standardized outcome, s_i , for each facility by computing the ratio of the number of predicted hospital visits to the number of expected hospital visits, multiplied by the overall national rate of unplanned hospital visit, \bar{y} . Specifically, we calculate:

$$(2) \quad \text{Predicted Value: } \hat{Y}_{ij} = h^{-1}(\hat{\alpha}_i + \hat{\beta}Z_{ij}) = \frac{\exp(\hat{\alpha}_i + \hat{\beta}Z_{ij})}{\exp(\hat{\alpha}_i + \hat{\beta}Z_{ij}) + 1}$$

$$(3) \quad \text{Expected Value: } \hat{e}_{ij} = h^{-1}(\hat{\mu} + \hat{\beta}Z_{ij}) = \frac{\exp(\hat{\mu} + \hat{\beta}Z_{ij})}{\exp(\hat{\mu} + \hat{\beta}Z_{ij}) + 1}$$

$$(4) \quad s_i = \frac{\sum_{j=1}^{n_i} \hat{Y}_{ij}}{\sum_{j=1}^{n_i} \hat{e}_{ij}} \times \bar{y}$$

If the “predicted” number of hospital visits is higher (lower) than the “expected” number of hospital visits, then that facility’s \hat{s}_i will be higher (lower) than the overall national rate of unplanned hospital visit.

Outlier Evaluation

We use re-sampling and simulation techniques to derive an interval estimate to determine if a facility is performing better than, worse than, or no different from its expected rate since the statistic described in [Equation \(4\)](#) is a complex function of parameter estimates. A facility is considered as better than expected if its entire confidence interval falls below the expected rate and considered worse if the entire confidence interval falls above the expected rate. It is considered no different if the confidence interval overlaps the expected rate.

More specifically, we use a bootstrapping procedure to compute confidence intervals. We use the bootstrap to empirically construct the sampling distribution for each facility-level risk-standardized rate because the theoretical-based standard errors are not easily derived, and to avoid making unnecessary assumptions. The bootstrapping algorithm is described below.

Bootstrapping Algorithm

Let I denote the total number of facilities in the sample. We repeat steps 1 – 4 below for $b = 1, 2, \dots, B$ times:

1. Sample I facilities with replacement.
2. Fit the hierarchical logistic regression model using all patients within each sampled facility. We use as starting values the parameter estimates obtained by fitting the model to all facilities. If some facilities are selected more than once in a bootstrapped sample, we treat them as distinct so that we have I random effects to estimate the variance components. At the conclusion of Step 2, we have:
 - a. The estimated regression coefficients of the risk factors, $\hat{\beta}^{(b)}$.

- b. The parameters governing the random effects, facility-adjusted outcomes, distribution, $\hat{\mu}^{(b)}$ and $\hat{\tau}^{2(b)}$.
 - c. The set of facility-specific intercepts and corresponding variances, $\{\hat{a}_i^{(b)}, \text{var}(\hat{a}_i^{(b)}); i=1, 2, \dots, I\}$.
3. We generate a facility random effect by sampling from the distribution of the facility-specific distribution obtained in Step 2c. We approximate the distribution for each random effect by a normal distribution. Thus, we draw $a_i^{(b*)} \sim N(\hat{a}_i^{(b)}, \text{var}(\hat{a}_i^{(b)}))$ for the unique set of facilities sampled in Step 1.
 4. Within each unique facility i sampled in Step 1, and for each case j in that facility, we calculate $\hat{y}_{ij}^{(b)}, \hat{e}_{ij}^{(b)}$, and $\hat{s}_i(Z)^{(b)}$ where $\hat{\beta}^{(b)}$ and $\hat{\mu}^{(b)}$ are obtained from Step 2 and $\hat{a}_i^{(b*)}$ is obtained from Step 3.

Ninety-five percent interval estimates (or alternative interval estimates) for the facility-standardized outcome can be computed by identifying the 2.5th and 97.5th percentiles of a randomly selected half of the B estimates (or the percentiles corresponding to the alternative desired intervals).

Appendix B: Annual Updates to General Surgery Measure since Measure Development

Annual updates of the measure can be found in the annual updates and specifications reports available on *QualityNet*. For convenience, we have listed key measure updates here by calendar year and corresponding report.

2023

2023 to Measures Updates and Specifications Reports

- Addition of 51 codes to the cohort inclusion and removal of 10 codes from the cohort inclusion

Rationale: Each year, as part of reevaluation of the measure, CMS reviews the measure's existing code set as well as updates to ICD-10, CPT®, and HCPCS coding guidelines to ensure that the measure's code set is up to date.

2022

2022 Measures Updates and Specifications Reports

- Addition of 51 codes to the cohort inclusion, removal of 10 codes from the cohort inclusion, addition of 1 code to the risk factors, revision of 3 surgery complications of care CC codes descriptions, addition of 113 codes in CC to ICD map, removal of 18 codes in CC to ICD map, and remapping of 4 ICD codes (J8281, V00841A, V00841D, V00841S).

Rationale: Each year, as part of reevaluation of the measure, CMS reviews the measure's existing code set as well as updates to ICD-10, CPT®, and HCPCS coding guidelines to ensure that the measure's code set is up to date.

Appendix C: Annual Updates to Orthopedic Measure since Measure Development

Annual updates of the measure can be found in the annual updates and specifications reports available on *QualityNet*. For convenience, we have listed key measure updates here by calendar year and corresponding report.

2023

2023 Measures Updates and Specifications Reports

- Updated the ICD-10 code-based specifications used in the measure.
Rationale: Each year, as part of reevaluation of the measure, CMS reviews the measure's existing code set as well as updates to ICD-10, CPT®, and HCPCS coding guidelines to ensure that the measure's code set is up to date.

2022

2022 Measures Updates and Specifications Reports

- Addition of 34 codes to the cohort inclusion, removal of 4 codes from the cohort inclusion, and addition of 1 code to the Opioid Abuse risk factor.
Rationale: Each year, as part of reevaluation of the measure, CMS reviews the measure's existing code set as well as updates to ICD-10, CPT®, and HCPCS coding guidelines to ensure that the measure's code set is up to date.

2021

2021 Measures Updates and Specifications Reports

- Shortening the measurement period for 2021 public reporting to approximately 18 months (from the typical 24-month measurement period).
Rationale: The measurement period reduction is in response to the COVID-19 public health emergency and CMS's decision to exclude claims data for January 1, 2020 - June 30, 2020 (Q1 and Q2 of 2020) under its ECE policy.
- Addition of 2 codes to the numerator (outcome), removal of 13 codes from the numerator (outcome), removal of 12 codes from the Opioid Abuse risk variable, removal of 1 code from the Tobacco Use Disorder risk variable, and removal of 1 code from the Chronic Anticoagulant Use risk variable.
Rationale: Each year, as part of reevaluation of the measure, CMS reviews the measure's existing code set as well as updates to ICD-10, CPT®, and HCPCS coding guidelines to ensure that the measure's code set is up to date.

Appendix D: Annual Updates to Urology Measure since Measure Development

Annual updates of the measure can be found in the annual updates and specifications reports available on *QualityNet*. For convenience, we have listed key measure updates here by calendar year and corresponding report.

2023

2023 Measures Updates and Specifications Reports

- Updated the ICD-10 code-based specifications used in the measure.
Rationale: Each year, as part of reevaluation of the measure, CMS reviews the measure's existing code set as well as updates to ICD-10, CPT®, and HCPCS coding guidelines to ensure that the measure's code set is up to date.

2022

2022 Measure Updates and Specifications Report

- Addition of 18 codes to the cohort inclusion.
Rationale: Each year, as part of reevaluation of the measure, CMS reviews the measure's existing code set as well as updates to ICD-10, CPT®, and HCPCS coding guidelines to ensure that the measure's code set is up to date.

2021

2021 Measure Updates and Specifications Report

- Shortening the measurement period for 2021 public reporting to approximately 18 months (from the typical 24-month measurement period).
Rationale: The measurement period reduction is in response to the COVID-19 public health emergency and CMS's decision to exclude claims data for January 1, 2020 - June 30, 2020 (Q1 and Q2 of 2020) under its ECE policy.
- Removal of one code from the cohort inclusion, addition of one code to the cohort inclusions, and the removal of three codes from the Benign Prostatic Hyperplasia risk variable.
Rationale: Each year, as part of reevaluation of the measure, CMS reviews the measure's existing code set as well as updates to ICD-10, CPT®, and HCPCS coding guidelines to ensure that the measure's code set is up to date.

Appendix E: Annual Updates to Colonoscopy Measure since Measure Development

Annual updates of the measure can be found in the annual updates and specifications reports available on *QualityNet*. For convenience, we have listed key measure updates here by calendar year and corresponding report.

2023

2023 Measures Updates and Specifications Reports

- Updated the ICD-10 code-based specifications used in the measure.
Rationale: Each year, as part of reevaluation of the measure, CMS reviews the measure's existing code set as well as updates to ICD-10, CPT®, and HCPCS coding guidelines to ensure that the measure's code set is up to date.

2022

2022 Measure Updates and Specifications Report

- Addition of 18 codes to the cohort inclusion and removal of 1 code from the cohort inclusion.
Rationale: Each year, as part of reevaluation of the measure, CMS reviews the measure's existing code set as well as updates to ICD-10, CPT®, and HCPCS coding guidelines to ensure that the measure's code set is up to date.

2021

2021 Measure Updates and Specifications Report

- Shortening the measurement period for 2021 public reporting to approximately 30 months (from the typical 36-month measurement period).
Rationale: The measurement period reduction is in response to the COVID-19 public health emergency and CMS's decision to exclude claims data for January 1, 2020 - June 30, 2020 (Q1 and Q2 of 2020) under its ECE policy.

2020

2020 Measure Updates and Specifications Report

- Update to coding for ED visits by shifting from the previously used 'claim from date' on the claim, to the 'minimum ED revenue center date' on the claim.
Rationale: Aligns with changes we made last year to exclude cases based on this date.

2019

2019 Measure Updates and Specifications Report

- Modification of the Planned Admission Algorithm (PAA) to align with changes made to CMS's Planned Readmission Algorithm Version 4.0_2020.**

** In this 2019 measure reevaluation report, the measure adapted Planned Readmission Algorithm Version 4.0_2020, but for future implementation, the measure will use the most up-to-date version available.

Rationale: These changes align with the specifications of similar measures and improve the accuracy of the algorithm.

- Update to exclusion for surgeries 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 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.

- Update to exclusion for 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 routine surgery. The timing of the ED visits is determined using revenue center dates from the outpatient claim.

2018

2018 Measure Updates and Specifications Report

- Modification of the PAA to align with changes made to CMS's Planned Readmission Algorithm version 4.0_2019.

Rationale: These changes align with the specifications of similar measures and improve the accuracy of the algorithm.

- Modification of the list of AHRQ CCS categories used to define complications of care for ED visit exclusions.

Rationale: The list of AHRQ CCS categories used to identify complications of care in the same claim/same day ED visit exclusions was modified and expanded to include one ICD-10 diagnosis code for post-procedural pain. The changes were made to improve the accuracy of the measure and ensure that it captures complications of care following low-risk colonoscopies.

2017

2017 Measure Updates and Specifications Report

- Expansion of same outpatient claim ED visit exclusion to include colonoscopies matched to inpatient claims with ED visits.

Rationale: In these situations, much like colonoscopies on the same outpatient claim as an ED visit, it is not possible to use claims data to determine whether the colonoscopy was the cause of, subsequent to, or during the ED visit.

- Adjustment of ED-related exclusions to only exclude colonoscopies on the same claim or on the same day and at the same facility as an ED visit if the facility claim does not have a diagnosis that is a complication of care as defined by four AHRQ CCS categories.

Rationale: While we cannot determine the order of events in these cases, we are keeping cases with facility diagnoses that indicate clear complications of care in order to ensure that the measure captures its intended outcome.

- Modification of the PAA to align with appropriate changes signaled during ICD-10 code testing and review.

Rationale: First, the algorithm was aligned with version 4 (ICD-10) of the Planned Readmission Algorithm used in the inpatient readmission measures and the 2017 ACO admission measures. Next, CMS removed or added additional ICD-10-PCS (from PA3) and ICD-10-CM (from PA4) codes, as appropriate to the colonoscopy measure, following review of new FY2017 codes and GEM mappings.

2016

2016 Measure Updates and Specifications Report

- Addition of three high-risk colonoscopy procedure codes to the list of excluded procedures.
Rationale: Because the measure is intended to assess quality of care during and following low-risk colonoscopy procedures, these three codes are not appropriate for inclusion in the measure cohort.
- Addition of new (added in 2015 or later) procedure codes for index low-risk colonoscopies, high-risk colonoscopies, and upper GI endoscopy exclusions.
Rationale: These new codes are consistent with the intent of the measure to include only low-risk procedures and reflect current code sets.
- Expansion of the exclusions for IBD and diverticulitis to include current diagnoses of IBD and diverticulitis as well as a history of either condition.
Rationale: IBD and diverticulitis are serious conditions that, if diagnosed during the colonoscopy, would likely result in an admission that does not reflect the quality or safety of the colonoscopy.
- Addition of an exclusion for 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.
- Exclude colonoscopies on the same-day, but on a separate-claim, as an ED visit occurring at the same facility.
Rationale: It is unclear whether a same-day ED visit occurred before or after a colonoscopy. However, it is unlikely that a patient would experience an ED visit for an acute diagnosis at one facility and then travel to another facility for a routine colonoscopy on the same day; therefore, ED visits at different facilities are not excluded because they likely represent complications of care.
- Updated the PAA with measure-specific changes and to align with CMS's Planned Readmission Algorithm version 4.0
Rationale: These changes improve the accuracy of the algorithm by decreasing the number of hospital visits that the algorithm mistakenly designated as unplanned or planned.

2015

2015 Colonoscopy Measure Specifications Report

- Addition of the exclusion for same-claim ED visits (applies to colonoscopies at HOPDs only).

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.

- Addition of exclusion for colonoscopies followed by a subsequent procedure within seven 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.

- (Revision to an original exclusion) Exclude colonoscopies for patients who are not continuously enrolled in Medicare FFS Parts A and B for at least seven days instead of 30 after the qualifying colonoscopy.

Rationale: Since the outcome time frame is seven days, the requirement for continuous enrollment was shortened in order to exclude as few index procedures as necessary.

Appendix F: Planned Admission Algorithm, Adapted from CMS Planned Readmission Algorithm Version 4.0

Planned Admission Algorithm Overview

The planned admission algorithm is adapted from the CMS Planned Readmission Algorithm Version 4.0. The algorithm is a set of criteria for classifying admissions within seven days of a procedure as planned or unplanned using Medicare claims. CMS seeks to count only unplanned admissions in the measure outcome, because variation in planned admissions does not reflect quality differences. [Section 3](#) provides detail on the changes made to the algorithm based on reevaluation.

General Surgery

The algorithm classifies admissions as planned or unplanned using a flow chart ([Figure E.1](#)) and four tables of procedures and conditions (Tables 7 through 10 in the 2023 General Surgery Data Dictionary):

- Tab “PAA1 Always Plnd Px” identifies procedures that, if present in an admission, classify the admission as planned.
- Tab “PAA2 Always Plnd Dx” identifies principal discharge diagnoses that classify admissions as planned.
- Tab “PAA3 Pot Plnd Px” identifies procedures that, if present, classify an admission as planned if that admission does not have an acute (unplanned) principal discharge diagnosis.
- Tab “PAA4 Acute Dx” lists the acute (unplanned) principal discharge diagnoses that disqualify admissions with a potentially planned procedure in Tab 10 (PA3) as planned.

Orthopedic

The algorithm classifies admissions as planned or unplanned using a flow chart ([Figure E.1](#)) and four tables of procedures and conditions (Tables 7 through 10 in the 2023 Orthopedic Data Dictionary):

- Tab “PAA1 Always Plnd Px” identifies procedures that, if present in an admission, classify the admission as planned.
- Tab “PAA2 Always Plnd Dx” identifies principal discharge diagnoses that classify admissions as planned.
- Tab “PAA3 Pot Plnd Px” identifies procedures that, if present, classify an admission as planned if that admission does not have an acute (unplanned) principal discharge diagnosis.
- Tab “PAA4 Acute Dx” lists the acute (unplanned) principal discharge diagnoses that disqualify admissions with a potentially planned procedure in Tab 10 (PA3) as planned.

Urology

The algorithm classifies admissions as planned or unplanned using a flow chart ([Figure E.1](#)) and four tables of procedures and conditions (Tables 7 through 10 in the 2023 Urology Data Dictionary):

- Tab “*PAA1 Always Plnnd Px*” identifies procedures that, if present in an admission, classify the admission as planned.
- Tab “*PAA2 Always Plnnd Dx*” identifies principal discharge diagnoses that classify admissions as planned.
- Tab “*PAA3 Pot Plnnd Px*” identifies procedures that, if present, classify an admission as planned if that admission does not have an acute (unplanned) principal discharge diagnosis.
- Tab “*PAA4 Acute Dx*” lists the acute (unplanned) principal discharge diagnoses that disqualify admissions with a potentially planned procedure in Tab 10 (PA3) as planned.

Colonoscopy

The algorithm classifies admissions as planned or unplanned using a flow chart ([Figure E.1](#)) and four tables of procedures and conditions (Tables 9 through 11 in the 2023 Colonoscopy Data Dictionary):

- Tab “*Colon PAA1 Always Plnnd Px*” identifies procedures that, if present in an admission, classify the admission as planned.
- Tab “*Colon PAA2 Always Plnnd Dx*” identifies principal discharge diagnoses that classify admissions as planned.
- Tab “*Colon PAA3 Pot Plnnd Px*” identifies procedures that, if present, classify an admission as planned if that admission does not have an acute (unplanned) principal discharge diagnosis.
- Tab “*Colon PAA4 Acute Dx*” lists the acute (unplanned) principal discharge diagnoses that disqualify admissions with a potentially planned procedure in Tab 11 (PA3) as planned.

The algorithm uses the Agency for Healthcare Research and Quality’s (AHRQ’s) Clinical Classification Software (CCS) (<http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp>) codes to group thousands of individual procedure and diagnosis ICD-10-CM codes into clinically coherent, mutually exclusive procedure CCS categories and mutually exclusive diagnosis CCS categories, respectively.

Figure E.1. Planned Admission Algorithm Flowchart

