

Cardiac Surgery

Akido Labs | MCG Care Guidelines, 30th Edition

1. MCG Criteria Used

Clinical Criteria: MCG Care Guidelines, 30th Edition

- Coronary Artery Bypass Graft (CABG): Inpatient Surgical Care (MCG ORG: S-390 ISC, 30th Edition)

Applicable CPT / HCPCS Codes:

CPT / HCPCS Code	Description
33500-33536	Coronary artery bypass grafting (CABG): arterial and venous grafts, with and without cardiopulmonary bypass
33010-33499	Cardiac surgery procedures: pericardiocentesis, cardiac repair, and related cardiovascular interventions
33400-33496	Valvular heart surgery: repair and replacement of aortic, mitral, tricuspid, and pulmonary valves
33600-33877	Repair of cardiac anomalies, great vessel reconstruction, and aortic surgery
92960-92979	Cardioversion, defibrillation, and related electrophysiological procedures
93451-93662	Right heart catheterization and cardiac catheterization with intervention: angioplasty, stenting, and valvuloplasty
99213-99215, 99231-99233	Evaluation and management: pre- and postoperative cardiac surgical care visits

2. Statement of Rationale

Akido Labs uses the criteria in MCG Care Guidelines (30th Edition) to supplement the general Medicare criteria regarding cardiac surgery services, including inpatient surgical care for coronary artery bypass grafting (CABG), where Medicare coverage criteria are not fully established or require additional clinical specificity. MCG criteria are used to ensure consistency in reviewing the conditions to be met for coverage of cardiac surgical services and to determine when such services are medically necessary. Coronary artery disease (CAD) is a leading cause of morbidity and mortality among the Medicare Advantage population, where comorbidities including diabetes, chronic kidney disease, heart failure, and peripheral vascular disease substantially elevate both procedural risk and postoperative complexity. CABG is the standard of care for patients with left main disease, three-vessel disease, or complex multi-vessel CAD (particularly with diabetes or reduced left ventricular ejection fraction). Analysis of the STS National Database demonstrates that Medicare patients constitute a disproportionate share of CABG recipients, with higher comorbidity burden and longer expected length of stay compared with commercially insured populations. Absent consistent, evidence-based criteria, there is material risk of both inappropriate denial of medically necessary cardiac surgery and inappropriate approval of procedures in patients for whom the risk-benefit balance does not support surgery.

Potential Clinical Harms:

Inappropriate denial: Denial of CABG for a patient with left main coronary artery disease, three-vessel disease with reduced ejection fraction, or failed percutaneous coronary intervention (PCI) could result in progressive myocardial ischemia, heart failure decompensation, life-threatening arrhythmia, or acute myocardial infarction. The FREEDOM trial demonstrates that CABG significantly reduces mortality and major adverse cardiac events compared with PCI in diabetic patients with three-vessel CAD at 5-year follow-up. The STICH trial demonstrates that CABG reduces all-cause mortality in patients with ischemic cardiomyopathy at 10-year follow-up (HR 0.84, 95% CI 0.73 to 0.97). Denial of indicated CABG in these populations carries direct mortality implications.

Inappropriate approval: Authorization of CABG for single-vessel disease amenable to PCI, or for a patient with prohibitive STS-PROM score without multidisciplinary heart team review, exposes the patient to cardiopulmonary bypass, sternotomy, and postoperative complications including stroke, renal failure, wound infection, prolonged mechanical ventilation, and death without commensurate clinical benefit. MCG criteria ensure appropriate patient selection by requiring documentation of CAD complexity, functional status, and validated risk stratification prior to authorization.

Clinical Benefits:

Evidence-based patient selection: MCG S-390 criteria incorporate the 2021 ACC/AHA/SCAI Coronary Artery Revascularization Guideline, which carries a Class I, Level of Evidence A recommendation for CABG over PCI in patients with three-vessel CAD and diabetes, directly supporting the clinical benefit of applying MCG criteria to this high-risk Medicare Advantage population. Evidence from the FREEDOM trial demonstrating significantly lower rates of death and myocardial infarction with CABG versus PCI at 5 years directly addresses the harm of progressive myocardial ischemia associated with inappropriate denial described above.

Validated surgical risk stratification: MCG criteria require use of the STS Predicted Risk of Mortality (STS-PROM) score, validated in over 1 million cardiac surgery cases as the standard preoperative mortality prediction tool endorsed by the Society of Thoracic Surgeons. Use of this validated scoring tool reduces unwarranted variation by ensuring procedural risk is systematically weighed against expected benefit prior to authorization, directly countering the harm of inappropriate approval in high-risk patients.

Readmission risk reduction: MCG criteria incorporate readmission risk assessments and discharge planning requirements aligned with evidence that early mobilization, structured cardiac rehabilitation, and appropriate antiplatelet and statin therapy significantly reduce 30-day readmission rates following CABG, directly benefiting the Medicare Advantage population's elevated readmission risk.

Reduction of unwarranted variation: Standardized MCG criteria reduce care disparities by applying consistent evidence-based thresholds across diverse patient populations, facilities, and geographic regions, supporting equitable coverage determinations for cardiac surgical services in the Medicare Advantage population. The clinical benefits of using MCG Care Guidelines are highly likely to outweigh any clinical harms, including delayed or decreased access to services. The criteria incorporate validated surgical risk stratification tools and anatomic indications drawn directly from current national specialty society guidelines (2021 ACC/AHA/SCAI, STS) and are unlikely to lead to inappropriate denials. Use of these criteria ensures patients receive the most clinically appropriate level of care and decreases inappropriate denials by applying a consistent, objective, evidence-based set of review criteria across the Medicare Advantage population.

3. Explanation of Supplementation

Basis for Use: Original Medicare clinical criteria are not fully established and require supplementation to ensure consistent medical necessity determinations for cardiac surgical services, including inpatient surgical care for coronary artery bypass grafting. While Medicare statutes establish the general reasonable and necessary standard, they do not specify the anatomic, functional, or risk stratification thresholds (e.g., SYNTAX score, STS-PROM, ejection fraction cutoffs, CAD complexity requirements) needed to distinguish CABG-appropriate from PCI-appropriate presentations, nor to ensure appropriate documentation of multidisciplinary heart team review for complex cases.

Applicable Medicare References: Social Security Act Section 1862(a)(1): Reasonable and necessary standard Medicare Benefit Policy Manual, Chapter 1: Inpatient Hospital Services Covered Under Part A (CMS IOM Publication 100-02) Medicare Benefit Policy Manual, Chapter 6: Hospital Services Covered Under Part B (CMS IOM Publication 100-02) Medicare Benefit Policy Manual, Chapter 15: Covered Medical and Other Health Services (CMS IOM Publication 100-02) Medicare Program Integrity Manual, Chapter 6, Section 6.5: Medical Review of Inpatient Hospital Claims for Part A Payment (CMS IOM Publication 100-08) Code of Federal Regulations: 42 CFR 412.3; 42 CFR 419.22; 42 CFR 422.101 Conditions of Participation: Discharge Planning (42 CFR 482.43) No specific NCD or LCD fully establishes clinical thresholds for these services. Original Medicare criteria are not fully established, requiring supplementation. Medicare Coverage Database: <https://www.cms.gov/medicare-coverage-database/search.aspx> Within the above statutes and regulations, coverage criteria for cardiac surgical services are not fully established, and the use of MCG Care Guidelines is necessary to provide additional clinical specificity. Specifically, MCG criteria assist in determining: Appropriateness of CABG versus alternative revascularization strategies (PCI) or medical management, based on coronary anatomy (SYNTAX score, left main involvement), ventricular function (ejection fraction), and comorbidity profile; Documentation of surgical risk stratification using validated tools (STS-PROM score) and evidence of multidisciplinary heart team review for complex or borderline cases; Medical necessity of inpatient surgical level of care based on procedural complexity, expected recovery trajectory, and requirement for postoperative hemodynamic monitoring and intensive care; Appropriateness of expected length of stay, postoperative complications requiring stay extensions, and discharge destination based on clinical recovery milestones; Medical necessity of perioperative services including blood product administration, anticoagulation management, and cardiac rehabilitation referral. The use of MCG Care Guidelines ensures consistency in reviewing the conditions to be met for coverage of cardiac surgical services. Use of these criteria to supplement the coverage criteria noted above provides clinical benefits by helping ensure CABG is not incorrectly denied when medically appropriate, nor incorrectly approved when not reasonable and necessary. The clinical benefits of using these criteria are highly likely to outweigh any clinical harms, including from inappropriate denials, because the criteria are unlikely to lead to inappropriate denials and will decrease unwarranted variation through a consistent set of evidence-based review criteria.

4. Summary of Clinical Evidence

Note: The following evidence summary is derived directly from MCG Care Guidelines, 30th Edition (ISC guideline S-390). The reference list below is drawn from the MCG S-390 guideline. Background Coronary artery bypass grafting (CABG) is a surgical procedure in which blocked or narrowed coronary arteries are bypassed using arterial or venous grafts to restore adequate myocardial blood flow. CABG is indicated for patients with left main coronary artery disease, complex three-vessel CAD (particularly with diabetes or reduced ejection fraction), or multivessel disease not amenable to PCI. The Society of Thoracic Surgeons Predicted Risk of Mortality (STS-PROM) score is the validated standard for preoperative risk stratification, based on clinical factors including patient age, comorbidities (peripheral vascular disease, diabetes, renal failure), and cardiac-specific variables (valvular disease, heart failure, recent MI). The SYNTAX score

quantifies coronary artery disease complexity and guides the choice between CABG and PCI, with higher scores favoring CABG, particularly in the presence of diabetes or three-vessel disease. Evidence Summary The MCG CABG guideline (30th Edition, ORG: S-390 ISC) is supported by peer-reviewed articles, specialty society guidelines, and systematic reviews. Key evidence includes: The 2021 ACC/AHA/SCAI Coronary Artery Revascularization Guideline carries a Class I recommendation (Level of Evidence A) for CABG over PCI in patients with three-vessel CAD and diabetes, based on the FREEDOM trial demonstrating significantly lower rates of death and myocardial infarction with CABG versus PCI at 5 years. The STICH trial demonstrated that in patients with ischemic cardiomyopathy (ejection fraction 35% or less), CABG plus medical therapy significantly reduced all-cause mortality compared with medical therapy alone at 10-year follow-up (hazard ratio 0.84, 95% CI 0.73 to 0.97), supporting a Class I recommendation for CABG in this population. Analysis of 91,861 patients undergoing elective uncomplicated CABG from the Nationwide Readmissions Database reported that 31% were discharged in 4 days or less, supporting the MCG goal length of stay of 4 days postoperative. The STS database, encompassing over 1 million cardiac surgery cases, validates the STS-PROM score as the standard tool for preoperative mortality prediction, with observed-to-expected mortality ratios consistently within accepted ranges when risk stratification criteria are appropriately applied. Evidence from the BEST Bypass Surgery trial demonstrates that bilateral internal thoracic artery (BITA) grafting reduces long-term mortality compared with single internal thoracic artery grafting, supporting complete arterial revascularization as the preferred strategy in appropriate candidates. Meta-analyses of transfusion thresholds in cardiac surgery (TRICS III, TRACS) found that restrictive transfusion strategies (hemoglobin threshold 7.5 to 8 g/dL) reduced postoperative complications without increasing mortality, supporting evidence-based blood management criteria in the MCG guideline. Rationale (from MCG) Use of this MCG care guideline helps the clinician identify patient-specific complex clinical factors that make it reasonable to expect a necessity for hospital care across 2 or more midnights. The evidence-based clinical criteria assist the clinician in the decision to appropriately admit a patient to inpatient care. For Medicare enrollees, MCG care guidelines also support the clinician in the decision to appropriately admit a patient to inpatient care when there is not an expectation of 2 or more midnights of hospital care (e.g., CMS Two-Midnight Rule exceptions). Use of these evidence-based clinical criteria ensures patients receive the most appropriate care for their specific condition, reduces unnecessary risks, promotes recovery, and provides a standard that can reduce disparities in care. These guidelines supplement but do not replace, modify, or supersede existing Medicare regulations or applicable National Coverage Determinations (NCDs) or Local Coverage Determinations (LCDs).

Related CMS Coverage Guidance (as cited in MCG 30th Edition): Code of Federal Regulations (CFR): 42 CFR 412.3; 42 CFR 419.22; 42 CFR 422.101 CMS IOM Publication 100-02, Medicare Benefit Policy Manual: Chapter 1 (Inpatient Hospital Services); Chapter 6 (Hospital Services Under Part B); Chapter 15 (Covered Medical and Other Health Services) CMS IOM Publication 100-08, Medicare Program Integrity Manual, Chapter 6, Section 6.5 Medicare Coverage Database: <https://www.cms.gov/medicare-coverage-database/search.aspx> References with Citation Summary -- Coronary Artery Bypass Graft (MCG ORG: S-390 ISC, 30th Edition) Lawton JS, et al. 2021 ACC/AHA/SCAI guideline for coronary artery revascularization: a report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. *Circulation* 2022;145(3):e18-e114. DOI: 10.1161/CIR.0000000000001038. (Reaffirmed 2025 Jun) Writing Committee Members, et al. 2023 AHA/ACC/ACCP/ASPC/NLA/PCNA guideline for the management of patients with chronic coronary disease: a report of the American Heart Association/American College of Cardiology joint committee on clinical practice guidelines. *Journal of the American College of Cardiology* 2023;82(9):833-955. DOI: 10.1016/j.jacc.2023.04.003. Shahian DM, et al. The Society of Thoracic Surgeons 2008 cardiac surgery risk models: part 1--coronary artery bypass grafting surgery. *Annals of Thoracic Surgery* 2009;88(1 Suppl):S2-S22. DOI: 10.1016/j.athoracsur.2009.05.053. Lancaster TS, et al. Long-term survival prediction for coronary artery bypass grafting: validation of the ASCERT model compared with the Society of Thoracic

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5. Public Accessibility

Transparency Tool URL: <https://akido.access.mcg.com/index>

Coverage Summaries URL: <https://www.myfamilymg.com/medical-necessity-supplementation-criteria/documents>

Navigation Instructions: To access these coverage summaries, navigate to the UM Criteria page, scroll to the bottom of the page, and click the Medical Necessity Supplementation Criteria link. All summaries are organized alphabetically by category.

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