

Quality Measures Fact Sheet

**Hospital Risk-Standardized Complication Rate following
Implantation of Implantable Cardioverter-Defibrillator (ICD)
Composite Measure**
National Quality Strategy Domain: Prevention and Treatment

Quality Measures Set: Alternate

Data Source: Registry

BPCI Advanced and Quality

The Center for Medicare & Medicaid Innovation's (the CMS Innovation Center's) BPCI Advanced Model rewards health care providers for delivering services more efficiently, supports enhanced care coordination, and recognizes high quality care. Hospitals and clinicians should work collaboratively to achieve these goals, which have the potential to improve the BPCI Advanced Beneficiary experience and align to the CMS Quality Strategy goals of promoting effective communication and care coordination, highlighting best practices, and making care safer and more affordable. A goal of the BPCI Advanced Model is to promote seamless, patient-centered care throughout each Clinical Episode, regardless of who is responsible for a specific element of that care.

Background on Implantable Cardioverter-Defibrillator Implantation

An implantable cardioverter-defibrillator (ICD) is an electronic device that continuously monitors cardiac electrical activity, paces the heart when needed, and defibrillates the heart if it detects a life-threatening arrhythmia. Research shows that ICDs improve survival in patients at heightened risk of sudden cardiac death.³⁴ Complications following ICD implantation may include hematoma, infection, pneumothorax, and lead/pulse generator malfunction.³⁵

³⁴ Russo, A. M., Stainback, R. F., Bailey, S. R., Epstein, A. E., Heidenreich, P. A., Jessup, M., & ... Stevenson, L. W. (2013). ACCF/HRS/AHA/ASE/HFSA/SCAI/SCCT/SCMR 2013 appropriate use criteria for implantable cardioverter-defibrillators and cardiac resynchronization therapy. *Journal of the American College of Cardiology*, 61(12), 1318–68. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/23453819>.

³⁵ Ezzat, V. A., Lee, V., Ahsan, S., Chow, A. W., Segal, O., Rowland, E., & Lambiase, P. D. (2015). A systematic review of ICD complications in randomized controlled trials versus registries: Is our 'real-world' data an underestimation? *Open Heart*, 2(1), e000198. Retrieved from <https://openheart.bmj.com/content/2/1/e000198>.

CMS Innovation Center Rationale for Including the Hospital Risk-Standardized Complication Rate Following Implantation of ICD Composite Measure in BPCI Advanced

ICD implantation is relatively common and complications are relatively uncommon. However, care teams should work together to avoid complications and improve outcomes. The CMS Innovation Center is promoting the Risk-Standardized Complication Rate following Implantation of ICD composite measure because it identifies the number of patients who experience one or more complications following initial ICD implantation, focuses attention on patient safety during ICD implantation, and promotes improved outcomes.³⁶

Applicable Clinical Episodes

The Hospital Risk-Standardized Complication Rate Following Implantation of ICD composite measure is included in the Alternate Quality Measures Set and applies to the following inpatient and outpatient Clinical Episodes³⁷:

- Cardiac Defibrillator Clinical Episode (Inpatient): Medicare Severity–Diagnosis-Related Groups (MS-DRG) 222, 223, 224, 225, 226, and 227
- Cardiac Defibrillator Clinical Episode (Outpatient): Healthcare Common Procedure Coding System (HCPCS) 33249, 33262, 33263, 33264, and 33270

Measure Specifications

The American College of Cardiology (ACC) National Cardiovascular Data Registry (NCDR®) ICD Registry™ specifications form the basis for the Risk-Standardized Complication Rate Following Implantation of ICD Composite measure. The measure identifies the number of patients who experience one or more complications following initial ICD implantation. The term “patients” refers to people 18 years and older who undergo a procedure at the hospital associated with the Clinical Episodes from the “Applicable Clinical Episodes” section, not limited to Medicare beneficiaries or BPCI Advanced Beneficiaries. The registry will calculate Acute Care Hospital (ACH) level performance for all patients included in the denominator. For Physician Group Practices (PGPs), the registry will calculate the measure as specified at individual hospitals, then the CMS Innovation Center will weight measure performance based on PGP Clinical Episode volume for each ACH where a PGP triggers an episode.

Denominator

The denominator for the Hospital Risk-Standardized Complication Rate Following Implantation of ICD composite measure includes all patients aged 18 years or older who receive an inpatient or outpatient ICD. This measure is not limited to Medicare beneficiaries or BPCI Advanced Beneficiaries.

All MS-DRG triggers apply, but this measure only applies to patients with an implanted ICD.

³⁶ National Quality Forum (2018). Measure Information: #0694 Hospital Risk-Standardized Complication Rate following Implantation of Implantable Cardioverter-Defibrillator (ICD). Retrieved from: <http://www.qualityforum.org/QPS/694>.

³⁷ MS-DRGs are up to date as of Model Year 3 (2020) and will be updated for Model Year 4 as needed.

The exclusions for this measure include patients:

- with procedures involving leads only
- with procedures to place an epicardial lead
- with procedures to extract a lead

Numerator

The numerator includes individuals in the previously defined denominator with one or more of the following complications occurring in the hospital after ICD implantation: cardiac arrest, cardiac perforation, coronary venous dissection, hemothorax, device-related infection, lead dislodgement, mortality, myocardial infarction, pericardial tamponade, pneumothorax, stroke/transient ischemic attack, urgent cardiac surgery, hematoma, or set screw problem.

Measure Submission

BPCI Advanced Participants may submit data for this measure through the ACC NCDR® ICD Registry™.

Revisions to the Published Specifications

This measure as implemented in the ACC NCDR® ICD Registry™ does not have the exact same specification as the ICD complications National Quality Forum (NQF)-endorsed measure. The ACC NCDR® ICD Registry™ version assesses in-hospital complications only, whereas the NQF version assesses complications 30 or 90 days post procedure. The BPCI Advanced Model will use the ACC NCDR® ICD Registry™ version of the measure which assesses only in-hospital complications.

Composite Quality Score

The Hospital Risk-Standardized Complication Rate following Implantation of ICD composite measure is one component of the BPCI Advanced Composite Quality Score (CQS) calculation. The CMS Innovation Center uses the CQS to adjust a portion of any Positive Total Reconciliation Amount and any Negative Total Reconciliation Amount. The CQS adjustment will not adjust the Positive Total Reconciliation Amount down by more than 10 percent, nor will it adjust the Negative Total Reconciliation Amount up by more than 10 percent. More information is available at the BPCI Advanced website provided below.

Other Resources

Organization/Resource	Website Address
BPCI Advanced	https://innovation.cms.gov/initiatives/bpci-advanced
ACC NCDR® ICD Registry™ Coder's Data Dictionary	https://cvquality.acc.org/docs/default-source/ncdr/Data-Collection/icd_v2_codersdatadictionary_2-2.pdf?sfvrsn=42748dbf_0
ACC Data Quality Checklist	https://cvquality.acc.org/docs/default-source/public-reporting-toolkit/b15229_public_reporting_toolikit_checklist_v5a.pdf?sfvrsn=ae418fbf_2
ACC ICD/CRT Appropriate Use Criteria App	https://www.acc.org/apps
ACC NCDR® BPCI Advanced	https://cvquality.acc.org/BPCIAdvanced
For a current list of participating hospitals; Find Your Heart a Home	https://www.cardiosmart.org/Resources/For-Hospitals