

# 3 CABG STUDIES



YOU NEED TO KNOW ABOUT

As pay-for-performance measures are being implemented, surgeons must increasingly seek to improve outcomes for their coronary artery bypass graft (CABG) patients and their hospitals.



You have got to prove your work is reducing healthcare costs while providing better results.



Here are three CABG studies you should know about that can do both.

# Defining Value in CABG to Provide a Framework for High-Value Centers

Pay-for-performance measures, as part of the Affordable Care Act, aim to reduce healthcare costs by linking value to Medicare payments.

In order to define value in coronary artery bypass grafting (CABG) and provide a framework to identify high-value centers, [a group of researchers matched](#) cost data with clinical patient-level data from multi-institutional statewide databases of 42,839 patients undergoing CABG.

Hierarchical models with adjustments for relevant preoperative patient characteristics and comorbidities were used to estimate center-specific risk-adjusted costs and risk-adjusted postoperative length of stay. Variation in value across centers was assessed by the correlation between risk-adjusted measures of quality (mortality, morbidity/mortality) and resource use (costs and length of stay).

The researchers found that there were no significant correlations between risk-adjusted costs and risk-adjusted mortality or morbidity/mortality across centers. Risk-adjusted costs and length of stay were not significantly associated.



The differences in cost accounting across centers may explain this lack of correlation between risk-adjusted quality and risk-adjusted cost measures. When risk-adjusted length of stay and morbidity/mortality were used for the framework, there was a strong positive correlation, indicating that higher risk-adjusted quality is associated with shorter risk-adjusted length of stay.



Risk-adjusted length of stay and risk-adjusted combined morbidity/mortality are important outcome measures for assessing value in cardiac surgery. The proposed framework can be used to define value in CABG and identify high-value centers. This provides information for quality improvement and pay-for-performance initiatives associated with adverse events that are more suitable for prioritizing quality improvement efforts.



# Studies Demonstrate the Usefulness of Intraoperative Transit-time Flow Measurement

In the most comprehensive analysis of publications about intraoperative transit-time measurement of bypass graft flow during CABG, [Gabriele Di Giammarco](#) from Chieti, Italy, sought an answer to a clinical question: **Whether transit-time flow measurement (TTFM) can improve graft patency and clinical outcomes in patients undergoing CABG surgery.**



Di Giammarco examined over 100 papers and selected the 10 that best answered this question.



The papers focused on three major criteria: intraoperative graft verification with the aim of improving immediate graft patency, predictive power of early- and mid-term graft patency and clinical outcome.

Among transit-time flow measurement parameters, according to different authors, mean graft flow was set at 10 or 15 ml/min; pulsatility index was set at three or five; insufficiency ratio was set at 3% or 4%.

The studies demonstrated the usefulness of intraoperative transit-time flow measurement as a method to improve intraoperative graft patency. Di Giammarco concluded that intraoperative transit-time flow measurement is a reliable method to verify intraoperative graft patency.



**Also noted was that there is some evidence that checking graft patency intraoperatively may improve mid-term outcomes.**

# New Findings on CABG Failure After On-Pump vs. Off-Pump

**Researchers** at the Cardiopulmonary Research Science & Technology Institute in Dallas, Texas, analyzed the one-year vein graft patency and major adverse cardiac and cerebral events (MACCE—death, myocardial infarction, or stroke) in on-pump and off-pump patients enrolled in PREVENT IV (the Project of Ex-vivo Vein graft ENGINEERING via Transfection IV).

The PREVENT IV Trial was a multicenter (107 sites) randomized trial testing the use of edifoligide to prevent vein graft failure from neointimal hyperplasia in 3,014 patients undergoing primary, isolated coronary artery bypass grafting (CABG) with at least two vein grafts.

One-year angiographic follow-up was completed on 1,920 patients (4,736 grafts) with MACCE follow-up on 99.4% of enrolled patients.



In the [study](#), 79% of the 2,377 patients underwent on-pump CABG; 21% underwent off-pump CABG. In both groups, saphenous vein failure rate was 25%.

The incidence of chronic lung disease was 17% for on-pump versus 11% for off-pump patients. Congestive heart failure was 10% for on-pump versus 7% for off-pump CABG patients. The ejection fraction for on-pump patients was 50%, versus 55% for off-pump patients.

The quality of the target coronary artery was better with the off-pump patients. One-year mortality was 3.3% for on-pump patients versus 2.5% for off-pump patients. One-year clinical outcomes (MACCE) were better with off-pump (11.3%) than with on-pump (15.4%) patients, suggesting that benefits were not related to vein graft patency.



Discover how using flow measurement during CABG can help improve outcomes for your patients and your hospital.



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