

The California Report on Coronary Artery Bypass Graft (CABG) Surgery 2013: Hospital Data

Coronary artery bypass graft (CABG) surgery is one of the most expensive and common cardiac surgeries performed in California. Improved medical interventions and quality improvement efforts have contributed to a declining mortality rate over the last 15 years. However, post-operative death and major complications (e.g. stroke, surgical site infections) still occur at rates that can and should be reduced.

The *California Report on Coronary Artery Bypass Graft Surgery 2013: Hospital Data* provides quality ratings for the 125 California-licensed hospitals performing adult isolated CABG¹ and CABG + Valve² surgery during 2013. This is the first time CABG + Valve results have been included in the report. Hospital results for isolated CABG operative mortality, hospital readmission, and internal mammary artery (IMA)³ utilization are based on calendar year 2013 data. Hospital results for CABG + Valve operative mortality and isolated CABG post-operative stroke are based on combined 2012-2013 calendar year data to increase statistical reliability. The four outcome measures are risk-adjusted, which is a statistical technique that enables fair comparison of hospitals even though some hospitals treat sicker patients.

- Isolated CABG operative mortality includes all deaths that occurred during the hospitalization in which the CABG surgery was performed (regardless of length of stay) and any deaths within 30 days after the surgery (no matter where they occurred).
- CABG + Valve operative mortality includes all deaths as defined above.
- Post-operative stroke is defined as a central neurologic deficit that occurred after the surgery and did not resolve within 24 hours. This measure only applies to isolated CABG surgeries.
- Hospital readmission is counted only if the patient – within 30 days of being discharged from the hospital where the surgery was performed – was readmitted with a condition related to the CABG surgery. This measure only applies to isolated CABG surgeries. Also included in this report is the internal mammary artery (IMA) utilization rate. IMA usage is an important process measure of surgical quality.⁴

¹ Isolated CABG surgery refers to heart bypass surgery without other major surgery, such as heart or lung transplantation, valve repair, performed concurrently with the bypass procedure. Patients undergoing CPR enroute to the operating room are excluded.

² CABG + Valve surgery refers to heart bypass surgery that also includes repair or replacement of the mitral valve and/or aortic valve. Patients with salvage operative status are excluded.

³ The internal mammary artery (IMA) supplies blood to the front chest wall and the breasts. It is a paired artery, running on each side of the inner chest. Evidence shows that the IMA, when grafted to a coronary artery, is less susceptible to obstruction over time and remains fully open longer than vein grafts.

⁴ IMA utilization was assessed only for first-time, isolated CABG surgeries where the operative status was elective or urgent and the left anterior artery was bypassed.

All hospitals listed in this report were given an opportunity to review their results prior to publication. One hospital submitted a comment letter, which can be viewed by clicking the hospital name with † in this report. These statements may help readers understand the concerns of healthcare providers regarding their performance information.

2013 Hospital Operative Mortality Findings

Isolated CABG operative mortality

- ❖ The operative mortality rate for isolated CABG surgery in California was 2.29 percent in 2013 (273 deaths after 11,940 procedures). This rate increased slightly from 2.11 percent in 2012, but represents a 21.3 percent reduction since 2003 (2.91 percent), the first year of mandated public reporting.
- ❖ After adjusting for patients' pre-operative health conditions, all hospitals performed within the statistically acceptable range of the state average; no hospital was rated "**Better**" or "**Worse**" than the state average.

CABG + Valve operative mortality

- ❖ The operative mortality rate for CABG + Valve surgery in California was 6 percent in 2012-2013 (309 deaths after 5,150 procedures). This measure is being publicly reported for the first time.
- ❖ After adjusting for patients' pre-operative health conditions, one hospital (Scripps Memorial Hospital-La Jolla) was rated "**Better**" than the state average. One hospital (Saint Mary's Medical Center-San Francisco) was rated "**Worse**" than the state average.

2012-2013 Hospital Post-Operative Stroke Findings

- ❖ The post-operative stroke rate for isolated CABG surgery in California was 1.49 percent (352 strokes after 23,660 procedures) during 2012-2013. This is similar to the national rate of 1.4 percent reported by the Society of Thoracic Surgeons⁵. Small increases in California's average post-operative stroke rate have occurred consistently since 2008 when the rate was 1.43 percent.
- ❖ After adjusting for patients' pre-operative health conditions, two hospitals (Kaiser Foundation Hospital-San Francisco and Rideout Memorial Hospital) were rated "**Worse**" than the state average. No hospital was rated "**Better**" than the state average.

2013 Hospital Readmission Findings

- ❖ The hospital 30-day readmission rate was 11.66 percent (1,252 of 10,740 patients) for patients who underwent isolated CABG surgery in 2013 and were discharged. This continues the slight decrease seen in readmissions rates since 2011 (12.97 percent).

⁵ Shahian DM, O'Brien SM, Filardo G, et al. The Society of Thoracic Surgeons 2008 cardiac surgery risk models: part 1—coronary artery bypass grafting surgery. *Ann Thorac Surg* 2009; 88:S2-22.

- ❖ After adjusting for patients' pre-operative health conditions, three hospitals (Marian Regional Medical Center, Stanford Hospital, and Tri-City Medical Center-Oceanside) were rated "**Better**" than the state average, and six hospitals (Grossmont Hospital, Henry Mayo Newhall Memorial Hospital, Los Angeles County/Harbor-UCLA Medical Center, Los Angeles County/University of Southern California Medical Center, Orange Coast Memorial Medical Center, and Shasta Regional Medical Center†) were rated "**Worse**" than the state average.

2013 Hospital Internal Mammary Artery (IMA) Usage Findings

- ❖ The IMA is the preferred conduit for CABG surgery of the left anterior descending (LAD) artery and hospitals with *high* rates of IMA usage are adhering to nationally recognized best practices in heart bypass surgery. There is no consensus on an optimal usage rate, so "**Better**" performance ratings are not given. The average IMA usage rate among California hospitals was 96.6 percent in 2013 compared to 96.5 percent in 2012 and 89.6 percent⁶ in 2003.
- ❖ Six of 125 California hospitals (Antelope Valley Hospital, Garfield Medical Center, Memorial Hospital Medical Center – Modesto, Palmdale Regional Medical Center, Sutter Medical Center of Santa Rosa, and Saint Francis Medical Center) were rated "**Low**" with IMA usage rates significantly lower than the state average. Two of these hospitals have had poor IMA usage rates historically. Sutter Medical Center of Santa Rosa has been rated "**Low**" every year since 2005 (when IMA usage was first publicly reported). Antelope Valley Hospital was rated "**Low**" in 2009, 2010, 2012 and 2013.

For detailed results by hospital, please see *California Hospital Performance Ratings for Coronary Artery Bypass Graft (CABG) Surgery by Region, 2013*. For information on research methods and statistical results, please see the *Technical Note for the California Report on Coronary Artery Bypass Graft Surgery 2013: Hospital Data*.

⁶ The increase in the statewide IMA usage rate over the last 10 years is partly due to a change in the IMA measure. Beginning in 2008, patients who did not have the left anterior descending artery bypassed were excluded from the denominator.