Cardiac Catheterization Laboratory Procedures (N = 11,213)

Cleveland Clinic is a regional and national referral center for percutaneous coronary intervention (PCI). A total of 11,213 cardiac catheterization procedures were done in 2013 to treat patients with simple and complex ischemic heart disease.

The data comparisons below demonstrate outcomes at Cleveland Clinic compared with those at hospitals included in the American College of Cardiology National Cardiovascular Data Registry (ACC-NCDR) CathPCI Registry® that perform more than 500 PCIs per year. Data are based on a 1-year rolling average; therefore, totals reported here may differ from those reported elsewhere in this book.

Risk Factors Among Patients Undergoing PCI Procedures (N = 1594)

2013

Percent

<table>
<thead>
<tr>
<th>2013</th>
<th>Cleveland Clinic</th>
<th>Comparable ACC-NCDR hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (&gt; 75 years)</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Acute care transfer</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>Prior MI</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Prior heart failure</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>Diabetes</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>Prior CABG</td>
<td>80</td>
<td>70</td>
</tr>
<tr>
<td>Severe LV dysfunction</td>
<td>90</td>
<td>80</td>
</tr>
<tr>
<td>Multivessel disease</td>
<td>100</td>
<td>90</td>
</tr>
</tbody>
</table>

Complex medical backgrounds can affect outcomes for patients who have PCI. Compared with patients at comparable hospitals, patients who had PCI at Cleveland Clinic in 2013 had more complex backgrounds.

Use of Adjunctive Medications Before and After PCI Procedures (N = 1730)

2013

Percent

<table>
<thead>
<tr>
<th>2013</th>
<th>Cleveland Clinic</th>
<th>Comparable ACC-NCDR hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin on admission</td>
<td>100</td>
<td>95</td>
</tr>
<tr>
<td>Aspirin</td>
<td>95</td>
<td>90</td>
</tr>
<tr>
<td>Statins</td>
<td>90</td>
<td>85</td>
</tr>
<tr>
<td>Thienopyridines</td>
<td>85</td>
<td>80</td>
</tr>
</tbody>
</table>

One of the ACC-NCDR key performance measures is the use of appropriate adjunctive medications before and after PCI. Cleveland Clinic’s administration rates exceed those of comparable hospitals.

Abbreviations: CABG, coronary artery bypass grafting; LV, left ventricular; MI, myocardial infarction
Source: ACC-NCDR database
In 2013, the rate of major vascular complications associated with PCI was lower than at comparable hospitals. The rates of stroke and risk-adjusted bleeding events were slightly higher. Cleveland Clinic is continuously striving to achieve the best possible outcomes for patients.

Source: ACC-NCDR database

PCI Procedure Complications

2013

In 2013, the American College of Cardiology/American Heart Association (ACC/AHA) changed the guideline for door-to-balloon time for patients who arrive in the emergency department with ST-elevated myocardial infarction (STEMI). The previous recommendation was PCI balloon inflation within 90 minutes of arrival vs the current 60 minutes. Cleveland Clinic continues to work toward this new goal to reduce risks of morbidity and mortality. In 2013, the median door-to-balloon time at Cleveland Clinic was 65 minutes.

Source: ACC-NCDR database

Door-to-Balloon Time (N = 40)∗

2013

A total of 40 patients treated for myocardial infarction at Cleveland Clinic’s emergency department met the ACC-NCDR reporting criteria for a primary diagnosis of STEMI. Among these patients, time to reperfusion was 65 minutes.

Source: ACC-NCDR database
Surgical Treatment for Ischemic Heart Disease (N = 1296)

CABG Volume

2013

Cleveland Clinic surgeons performed 1296 coronary artery bypass graft (CABG) procedures in 2013. A total of 729 were in combination with another procedure and 567 were isolated procedures.

CABG Volume, Primary and Reoperations

2013

The majority of CABG procedures at Cleveland Clinic in 2013 were primary operations. A primary operation is the first time a patient has a particular procedure. Reoperations are repeat procedures.

CABG + Other, Inpatient Hospital Mortality

2013

Inpatient hospital mortality rates among patients who had CABG surgery plus another procedure at Cleveland Clinic in 2013 (primary and reoperations) were lower than those at comparable hospitals.

Source: These data are prepared using the University HealthSystem Consortium (UHC) Clinical Database. uhc.edu
Isolated CABG Procedures, Inpatient Hospital Mortality (N = 567)

Cleveland Clinic surgeons performed 567 isolated CABG procedures in 2013. The inpatient hospital mortality rate was 0.5% (N = 3), which was lower than the expected rate of 2.0%.


Isolated CABG Procedures, Inpatient Hospital Mortality — Primary and Reoperation 2013

Many patients who have CABG reoperations at Cleveland Clinic have very complex medical histories, which creates a higher risk of death. Despite these increased risks, the inpatient hospital mortality rates at Cleveland Clinic were 0% for reoperations and 0.6% (N = 3) for primary operations. Both rates were lower than expected.

Source: These data are prepared using the University HealthSystem Consortium (UHC) Clinical Database. uhc.edu

Cleveland Clinic is among the 15% of hospitals that achieved an overall three-star rating from The Society of Thoracic Surgeons (STS) for CABG surgery. The rating reflects the highest quality of cardiac surgery.

*Based on data comparisons from July 2012 through June 2013.
Primary Isolated CABG: Age-Related Risk of Inpatient Hospital Mortality

2013

The complexity of CABG procedures increases with age. The majority of patients who had primary isolated CABG surgery at Cleveland Clinic in 2013 were age 60 and older. Mortality rates were lower than expected for all age groups, except among patients age 80 or older. Cleveland Clinic continuously strives to achieve the best possible outcome for every patient.

<table>
<thead>
<tr>
<th>Age</th>
<th>Observed mortality (%)</th>
<th>Expected mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50 years (N = 46)</td>
<td>0.0</td>
<td>0.7</td>
</tr>
<tr>
<td>50–59 years (N = 113)</td>
<td>0.0</td>
<td>1.1</td>
</tr>
<tr>
<td>60–69 years (N = 204)</td>
<td>0.0</td>
<td>1.7</td>
</tr>
<tr>
<td>70–79 years (N = 119)</td>
<td>0.8</td>
<td>2.7</td>
</tr>
<tr>
<td>≥ 80 years (N = 30)</td>
<td>6.7</td>
<td>4.5</td>
</tr>
<tr>
<td>Total (N = 512)</td>
<td>7.5</td>
<td>10.7</td>
</tr>
</tbody>
</table>

Isolated CABG: Additional Outcomes

Deep Sternal Wound Infection

2013

The expected rate of a deep sternal wound after isolated CABG surgery was 0.5% in 2013. The rate was lower at Cleveland Clinic (0.4%).

Ischemic Heart Disease – Surgical Treatment (continued)

Ventilator Time > 24 Hours

2013
A total of 6.9% of patients who had isolated CABG surgery at Cleveland Clinic in 2013 spent more than 24 hours on a ventilator. This is lower than the expected rate of 10.6%.


In-Hospital Reoperation

2013
The expected rate of in-hospital reoperation after isolated CABG surgery was 5.2% in 2013. The rate at Cleveland Clinic was 2.8%.


Postoperative Stroke

2013
A total of 1.2% of patients who had isolated CABG surgery at Cleveland Clinic in 2013 had a postoperative stroke. This is the same as the expected rate for this complication.

Postoperative Renal Failure

2013
Postoperative renal failure occurred in 1.4% of patients who had isolated CABG surgery at Cleveland Clinic in 2013. This was lower than the expected rate of 4.3%.


Process Measures

2013
Cleveland Clinic was 100% compliant in 2013 with all Society of Thoracic Surgeons process measures. The process measures include the use of a perioperative beta blocker; beta blocker, statin, and aspirin at discharge; and use of an internal mammary artery during isolated CABG surgery.

The Centers for Medicare & Medicaid Services (CMS) calculates the two AMI outcomes measures above based on Medicare claims and enrollment information. The most recent risk-adjusted data available from CMS are shown. Although Cleveland Clinic's AMI mortality rate is lower than the US national rate, and Cleveland Clinic's AMI readmissions rate is slightly higher than the US national rate, CMS ranks Cleveland Clinic's performance on both as “no different than” the US national rate. To further reduce avoidable readmissions, Cleveland Clinic is focused on improving transitions from hospital to home or postacute facility. Specific initiatives have been implemented in each of these areas: communication, education, and follow-up.