

# Valve Disease

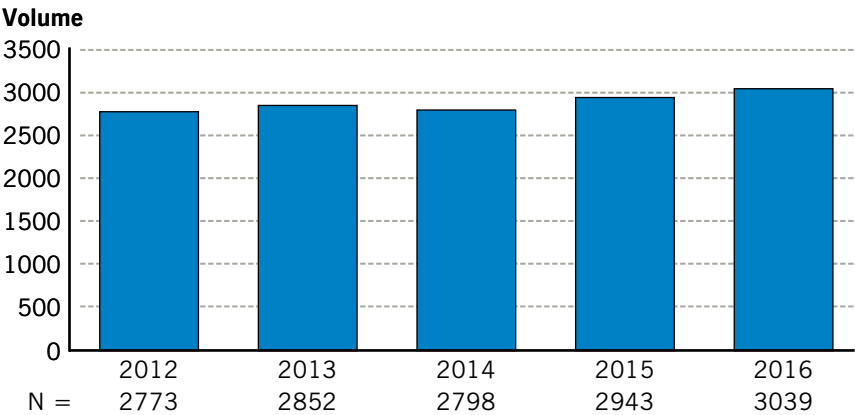


Cleveland Clinic surgeons have implanted more than 14,000 bioprosthetic aortic valves since the 1990s, with excellent short- and long-term outcomes.

## Valve Surgery

### Total Volume

2012 – 2016

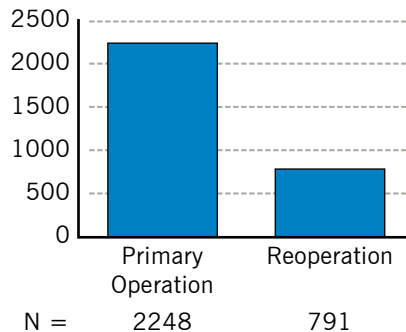


In 2016, Cleveland Clinic surgeons performed 3039 valve surgeries.

## Primary Operation and Reoperation Volume (N = 3039)

2016

### Volume

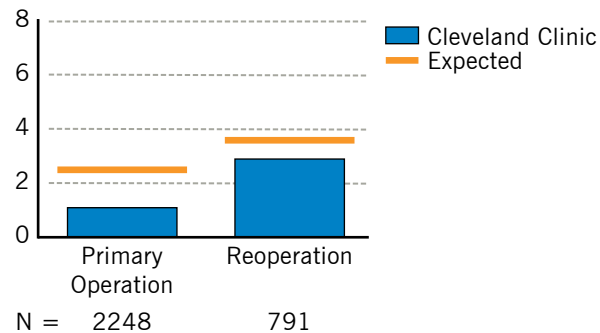


In 2016, Cleveland Clinic surgeons performed 2248 primary valve procedures and 791 valve reoperations.

## Primary Operation and Reoperation In-Hospital Mortality (N = 3039)

2016

### Percent



Patients who have valve surgery reoperations have a somewhat higher risk of death compared with patients who have a primary operation, due to the overall decrease in health over time. Despite this, the in-hospital mortality rates were lower than expected for both reoperations and primary procedures.

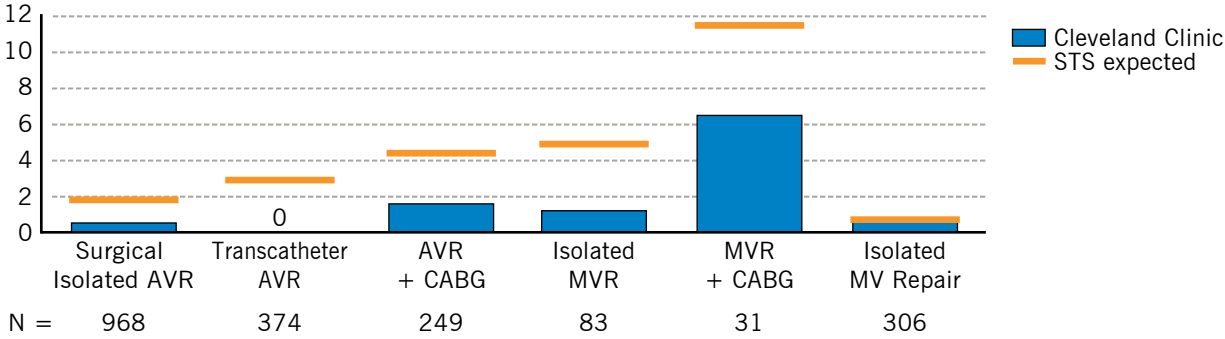
Source: Data from the Vizient Clinical Data Base/Resource Manager™ used by permission of Vizient. All rights reserved.

# Valve Disease

## In-Hospital Mortality by Procedure Type (N = 2011)

2016

Percent



AVR = aortic valve replacement, CABG = coronary artery bypass graft, MV = mitral valve, MVR = mitral valve replacement

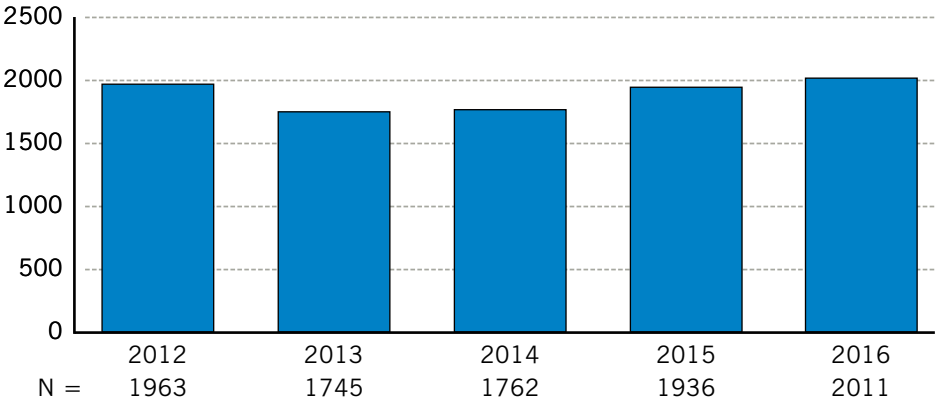
Cleveland Clinic surgeons performed a total of 3039 valve surgeries in 2016. However, the procedures included in this graph represent only those that are recognized by the Society of Thoracic Surgeons (STS). The mortality rates for valve surgery were lower than the STS-expected rates.

Source: Society of Thoracic Surgeons (STS) National Adult Cardiac Surgery Database 2016

## Aortic Valve Surgery

2012 – 2016

Volume

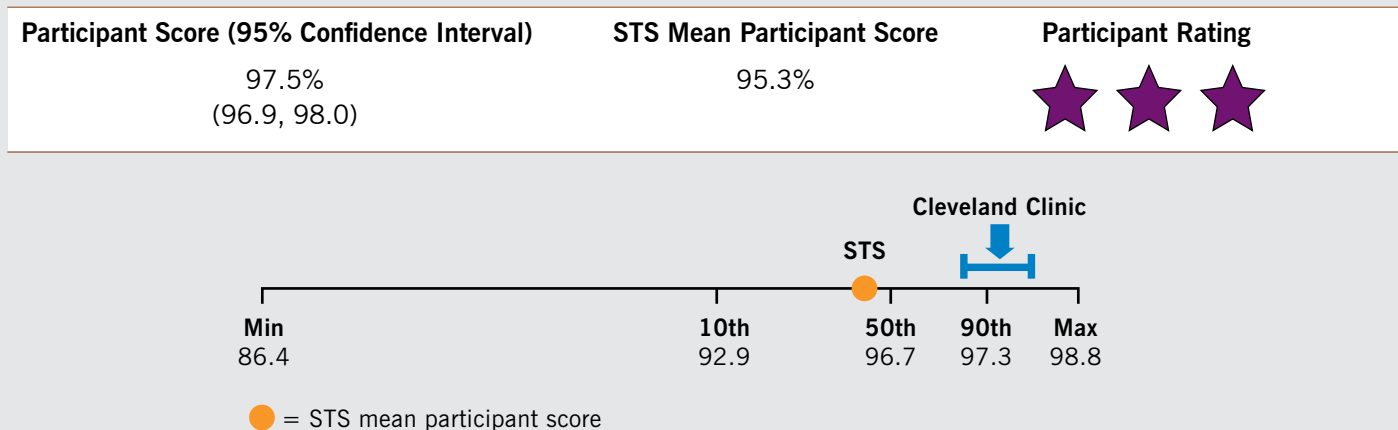


In 2016, 2011 aortic valve procedures were performed at Cleveland Clinic.

## STS Rating for Aortic Valve Replacement

July 2013 – June 2016

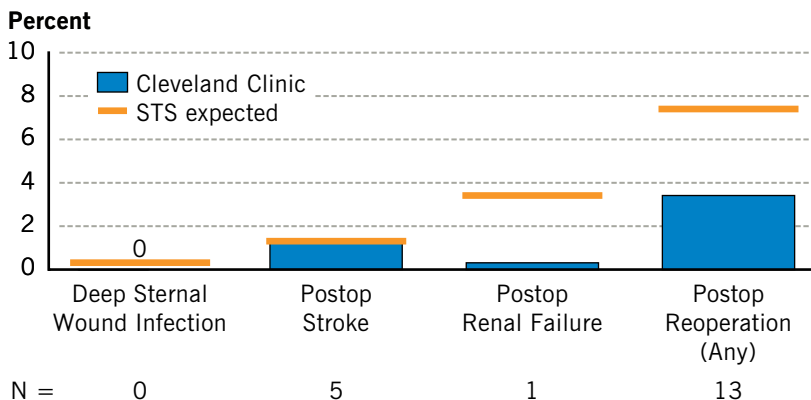
Cleveland Clinic ranked among the top 8% of US hospitals for aortic valve replacement (AVR) surgery, earning the Society of Thoracic Surgeons' (STS) 3-star rating for this category. This denotes the highest category of quality.



Source: Society of Thoracic Surgeons (STS) National Adult Cardiac Surgery Database 2016

## Isolated Aortic Valve Replacement Complications (N = 379)

2016



Cleveland Clinic had lower-than-expected rates of complications for isolated aortic valve replacement surgery.

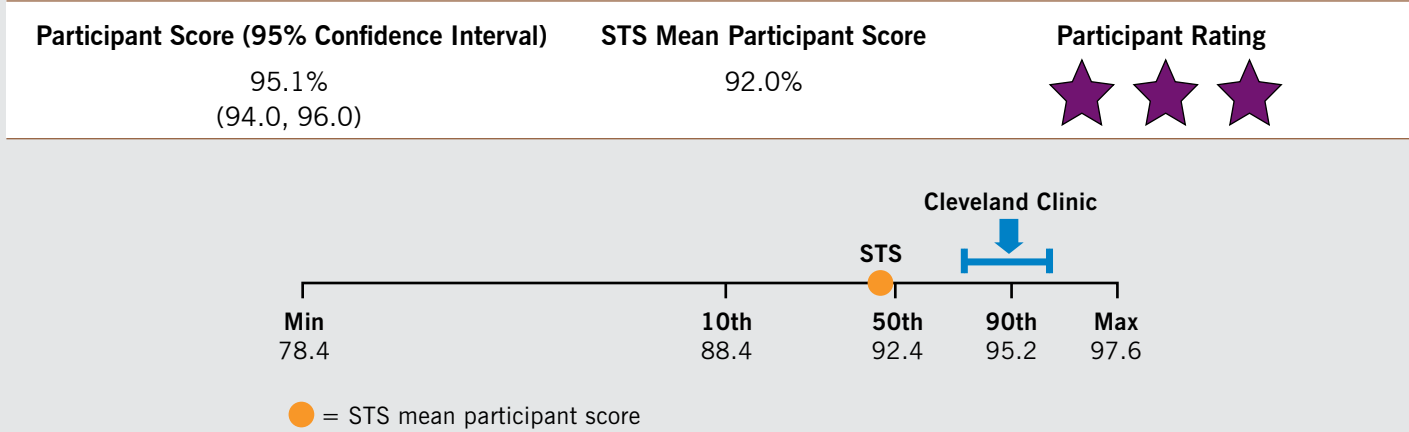
Source: Society of Thoracic Surgeons (STS) National Adult Cardiac Surgery Database 2016

# Valve Disease

## STS Rating for Coronary Artery Bypass Graft and Aortic Valve Replacement

July 2013 – June 2016

Cleveland Clinic is ranked among top US hospitals for coronary artery bypass graft (CABG) surgery plus aortic valve replacement (AVR), earning the Society of Thoracic Surgeons' (STS) 3-star rating for this category (based on data from July 2013 through June 2016). This denotes the highest category of quality.



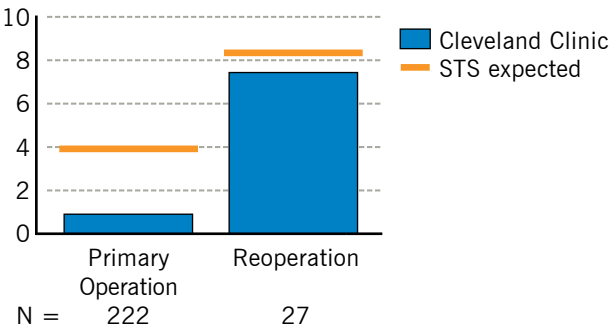
Source: Society of Thoracic Surgeons (STS) National Adult Cardiac Surgery Database 2016

## Combined AVR and CABG Surgery

In-Hospital Mortality (N = 249)

2016

Percent



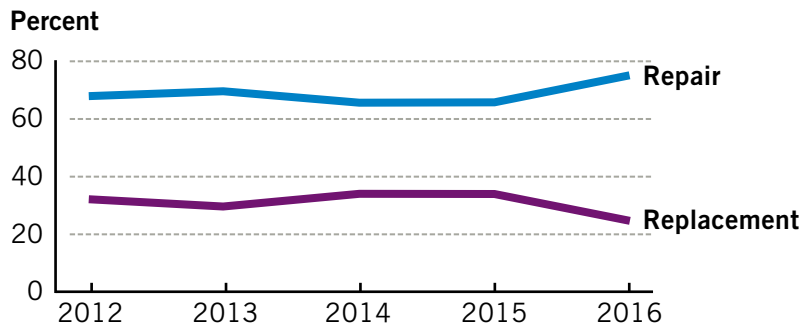
Aortic valve replacement, in combination with CABG surgery, is a complex operation. Despite this complexity and the associated increase in risks, in-hospital mortality rates for both primary operations and reoperations were low.

Source: Society of Thoracic Surgeons (STS) National Adult Cardiac Surgery Database 2016

## Mitral Valve Surgery (N = 1239)

### Volume, Repair vs Replacement

2012 – 2016

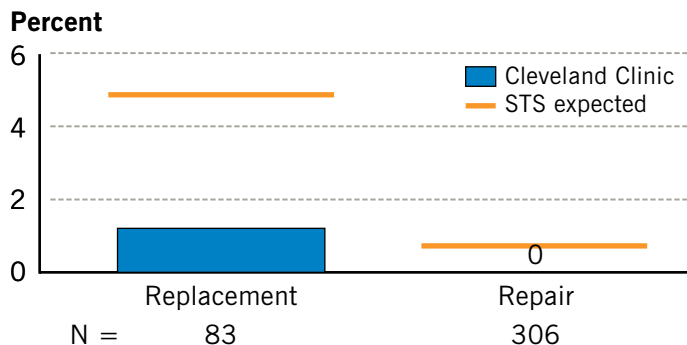


Cleveland Clinic performs mitral valve repair procedures rather than replacement whenever possible. Mitral valve repair is possible for more than 95% of patients who have mitral valve prolapse. The procedure is associated with better survival, improved lifestyle, better preservation of heart function, and a lower risk of stroke and infection (endocarditis) compared with mitral valve replacement. Repair procedures also do not require postprocedure anticoagulation therapy.

## Isolated Mitral Valve Surgery

### In-Hospital Mortality (N = 389)

2016



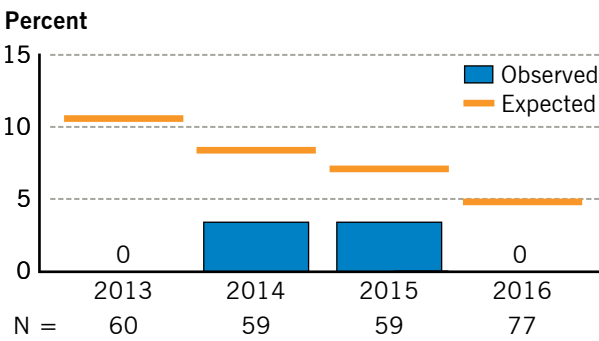
The 2016 in-hospital mortality rates for Cleveland Clinic patients who had isolated mitral valve surgery were lower than expected for both repair and replacement procedures.

Source: Society of Thoracic Surgeons (STS) National Adult Cardiac Surgery Database 2016

## Surgical Treatment of Active Infective Endocarditis

### Primary Operation, In-Hospital Mortality

2013 – 2016

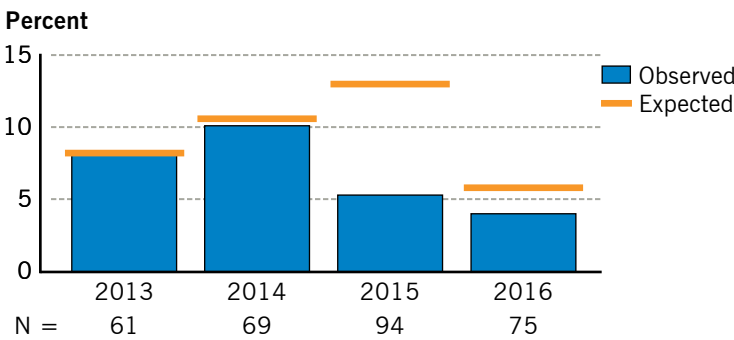


The in-hospital mortality rates for patients who had primary operations for infective endocarditis were lower than expected in 2016.

Source: Data from the Vizient Clinical Data Base/Resource Manager™ used by permission of Vizient. All rights reserved.

### Reoperation, In-Hospital Mortality

2013 – 2016



The in-hospital mortality rates for patients who had reoperations for infective endocarditis were lower than expected in 2016.

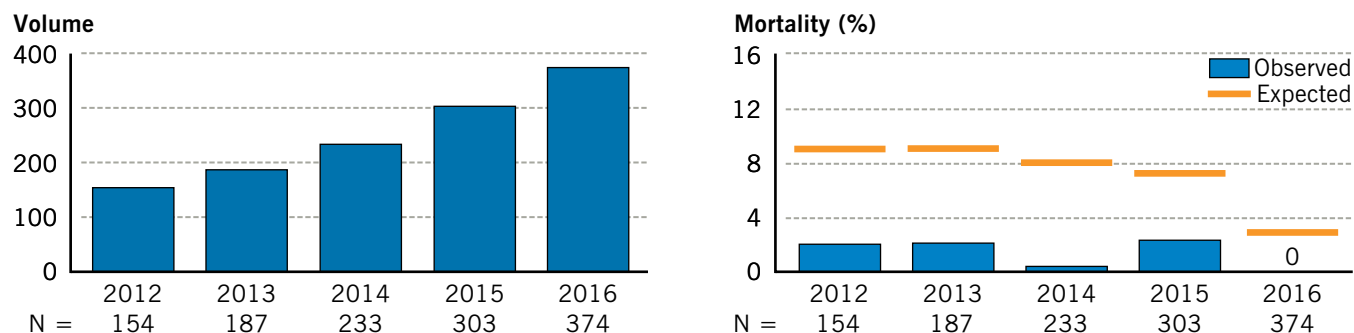
Source: Data from the Vizient Clinical Data Base/Resource Manager™ used by permission of Vizient. All rights reserved.

## Transcatheter Aortic Valve Replacement

Cleveland Clinic is a national leader in the use of percutaneous treatment options for patients with valve disease.

### Volume and In-Hospital Mortality

2012 – 2016



A total of 374 patients had transcatheter aortic valve replacement procedures at Cleveland Clinic in 2016. The in-hospital mortality rate was 0% compared with an expected rate of 2.9%. The 30-day mortality rate was 0.3% (N = 1).

Source: Data from the Vizient Clinical Data Base/Resource Manager™ used by permission of Vizient. All rights reserved.

Since the inception of the transcatheter aortic valve replacement (TAVR) program in 2006, Cleveland Clinic has become a world leader in the use of this specialized treatment in patients carefully selected based on stringent clinical criteria. A total of 1398 patients have had this procedure done from 2010 to 2016.

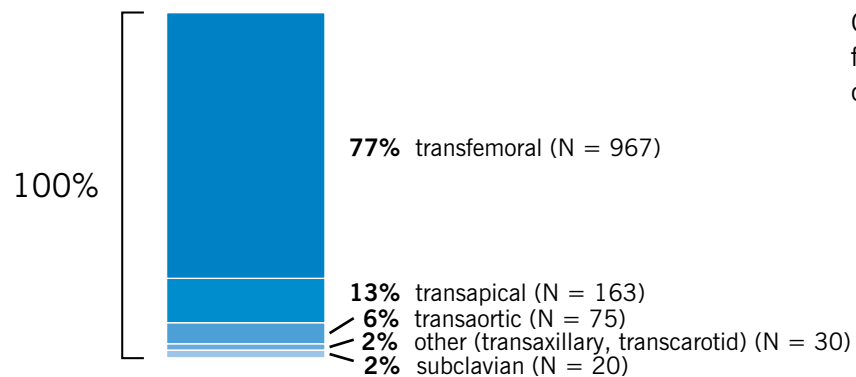
Source: STS/ACC TVT Registry™



# Valve Disease

## Volume by Approach (N = 1255)

2012 – 2016



Of the 1255 TAVR procedures performed from 2012 through 2016, 77% have been done using a transfemoral approach.

