ConsumerReports®

Hospital Ratings Heart Surgery

The data come from the Society of Thoracic Surgeons for hospitals that have agreed to share their data with us.

BYPASS SURGERY RATINGS Reflects a hospital's performance in isolated coronary artery bypass graft surgery, including the open-heart approach and less invasive versions. Overall score is a composite of four measures: survival (percentage of patients who leave the hospital and survive at least 30 days after surgery), complications (percentage of patients who avoid the most serious complications, including needing a second operation, developing a deep chest infection, suffering a stroke or kidney failure, and requiring prolonged ventilation), best surgical technique (percentage of patients who receive at least one graft from an internal mammary artery, located under the breastbone, which improves survival), and right drugs (percentage of patients who receive beta-blockers before and after surgery to control blood pressure and heart rhythm, aspirin to prevent blood clots, and a drug after surgery to lower LDL (bad) cholesterol).

VALVE REPLACEMENT RATINGS Reflects a hospital's performance in surgical aortic valve replacement. Does not include data for trans-catheter aortic valve replacement, though the STS has started to collect it. Overall score is a composite of two measures: survival (percentage of patients who leave the hospital and survive at least 30 days after surgery) and complications (percentage of patients who avoid the most serious complications, which are the same as for bypass).

All data were adjusted based on the health of patients. Still, limitations of such adjustments can make direct comparisons difficult.

MORE INFORMATION For details on our methodology, go to www.ConsumerReports.org/cro/howweratehospitals. For our complete hospital Ratings, subscribers to our website can go to www.ConsumerReports.org/hospitalratings.

		BELOW AVERAGE ●	AVERAGE ○	ABOVE AVERAGE ◉
HOSPITAL	**CITY**	**CORONARY ARTERY BYPASS SURGERY RATING**	**AORTIC VALVE REPLACEMENT SURGERY RATING**	
ALABAMA				
East Alabama Medical Center	Opelika	○	—	
Providence Hospital	Mobile	○	—	
ARIZONA				
Banner Boswell Medical Center	Sun City	○	—	
Chandler Regional Medical Center	Chandler	○	○	
Flagstaff Medical Center	Flagstaff	○	○	
Havasu Regional Medical Center	Lake Havasu City	○	—	
Scottsdale Healthcare Shea Medical Center	Scottsdale	○	—	
Scottsdale Healthcare - Osborn Medical Center	Scottsdale	○	—	
University of Arizona Medical Center - University Campus	Tucson	◉	○	
Yuma Regional Medical Center	Yuma	○	—	
ARKANSAS				
NEA Baptist Memorial Hospital	Jonesboro	—	○	
St. Bernards Medical Center	Jonesboro	○	—	

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BELOW AVERAGE ● AVERAGE ○ ABOVE AVERAGE ⊙

HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
CALIFORNIA			
Alta Bates Summit Medical Center - Summit Campus	Oakland	○	—
California Pacific Medical Center	San Francisco	○	○
Community Memorial Health System	Ventura	○	○
Desert Regional Medical Center	Palm Springs	○	○
Glendale Adventist Medical Center	Glendale	○	○
Glendale Memorial Hospital and Health Center	Glendale	○	—
Good Samaritan Hospital	Los Angeles	○	—
Hoag Memorial Hospital Presbyterian	Newport Beach	○	—
Huntington Memorial Hospital	Pasadena	○	—
John Muir Medical Center, Concord	Concord	○	○
Kaiser Permanente San Francisco Medical Center	San Francisco	○	—
Kaiser Permanente Santa Clara Medical Center	Santa Clara	○	—
Long Beach Memorial Medical Center	Long Beach	●	○
Marin General Hospital	Greenbrae	○	—
Mercy Medical Center Redding	Redding	⊙	○
Mills-Peninsula Health Services	Burlingame	○	○
Mission Hospital	Mission Viejo	⊙	○
NorthBay Medical Center	Fairfield	○	—
Pomona Valley Hospital Medical Center	Pomona	○	—
Presbyterian Intercommunity Hospital	Whittier	○	—
Providence Holy Cross Medical Center	Mission Hills	○	—
Providence Little Company of Mary Medical Center	Torrance	●	—
Providence Saint Joseph Medical Center	Burbank	○	—
Providence Tarzana Medical Center	Tarzana	○	—
Queen of the Valley Medical Center	Napa	●	—
Ronald Reagan University of California Los Angeles Medical Center	Los Angeles	○	⊙
Saddleback Memorial Medical Center	Laguna Hills	○	—
Salinas Valley Memorial Healthcare System	Salinas	○	○
San Ramon Regional Medical Center	San Ramon	○	—
Santa Rosa Memorial Hospital	Santa Rosa	○	—

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HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
CALIFORNIA (continued)			
Sequoia Hospital	Redwood City	◉	◉
Sharp Chula Vista Medical Center	Chula Vista	○	○
Sharp Grossmont Hospital	La Mesa	○	○
Sharp Memorial Hospital	San Diego	○	○
St. John's Regional Medical Center	Oxnard	○	—
St. Joseph Hospital	Orange	○	○
St. Joseph's Medical Center	Stockton	◉	○
St. Jude Medical Center	Fullerton	◉	—
Stanford Hospital and Clinics	Palo Alto	○	◉
Torrance Memorial Medical Center	Torrance	○	—
University of California, Davis Medical Center	Sacramento	○	—
Washington Hospital Healthcare System	Fremont	○	—
COLORADO			
Exempla Lutheran Medical Center	Wheat Ridge	○	○
Exempla Saint Joseph Hospital	Denver	○	○
Medical Center of the Rockies	Loveland	○	—
Memorial Health System	Colorado Springs	○	○
North Colorado Medical Center	Greeley	○	○
Penrose-St. Francis Health Services	Colorado Springs	○	○
University of Colorado Hospital	Aurora	○	○
DELAWARE			
Bayhealth Medical Center	Dover	○	○
Beebe Medical Center	Lewes	○	—
Christiana Care Health System	Newark	○	○
DISTRICT OF COLUMBIA			
George Washington University Hospital	Washington	○	—
MedStar Washington Hospital Center	Washington	◉	—
FLORIDA			
Cleveland Clinic Florida	Weston	○	○
Delray Medical Center	Delray Beach	○	○

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HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
FLORIDA (continued)			
Holy Cross Hospital	Fort Lauderdale	○	○
Indian River Medical Center	Vero Beach	○	—
Lakeland Regional Medical Center	Lakeland	○	—
Leesburg Regional Medical Center	Leesburg	●	—
Memorial Regional Hospital	Hollywood	⊙	○
Morton Plant Hospital	Clearwater	○	○
Munroe Regional Medical Center	Ocala	⊙	—
NCH Downtown Naples Hospital (Naples Community Hospital)	Naples	○	—
Orlando Regional Medical Center	Orlando	○	○
Sarasota Memorial Hospital	Sarasota	⊙	○
St. Joseph's Hospital	Tampa	⊙	—
Venice Regional Medical Center	Venice	⊙	○
Winter Haven Hospital	Winter Haven	⊙	○
GEORGIA			
Athens Regional Medical Center	Athens	○	—
Piedmont Hospital	Atlanta	○	○
Saint Joseph's Hospital of Atlanta	Atlanta	○	—
St. Francis Hospital	Columbus	○	—
WellStar Kennestone Hospital	Marietta	⊙	—
HAWAII			
Straub Clinic & Hospital	Honolulu	○	—
IDAHO			
Kootenai Medical Center	Coeur D'alene	○	○
Portneuf Medical Center	Pocatello	○	○
Saint Alphonsus Regional Medical Center	Boise	—	○
St. Luke's Regional Medical Center	Boise	○	○
ILLINOIS			
Adventist Hinsdale Hospital	Hinsdale	○	○
Adventist La Grange Memorial Hospital	La Grange	○	○
Advocate BroMenn Medical Center	Normal	○	○

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HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
ILLINOIS (continued)			
Advocate Christ Medical Center	Oak Lawn	⊙	○
Advocate Condell Medical Center	Libertyville	⊙	○
Advocate Good Samaritan Hospital	Downers Grove	⊙	○
Advocate Good Shepherd Hospital	Barrington	○	○
Advocate Illinois Masonic Medical Center	Chicago	○	○
Advocate Lutheran General Hospital	Park Ridge	○	○
Advocate Sherman Hospital	Elgin	⊙	○
Central DuPage Hospital	Winfield	⊙	—
Edward Hospital	Naperville	○	○
Elmhurst Memorial Hospital	Elmhurst	○	○
Memorial Medical Center	Springfield	○	—
MetroSouth Medical Center	Blue Island	○	○
Northwestern Memorial Hospital	Chicago	○	—
OSF Saint Anthony Medical Center	Rockford	○	●
OSF Saint Francis Medical Center	Peoria	○	—
Palos Community Hospital	Palos Heights	○	—
Presence Covenant Medical Center	Urbana	○	—
Presence Mercy Medical Center	Aurora	○	—
Presence Resurrection Medical Center	Chicago	○	—
Presence Saint Joseph Hospital	Chicago	○	○
Presence Saint Joseph Hospital	Elgin	○	—
Presence Saints Mary & Elizabeth Medical Center	Chicago	○	—
Rockford Memorial Hospital	Rockford	○	—
St. John's Hospital (Prairie Heart Institute)	Springfield	○	○
Swedish Covenant Hospital	Chicago	○	—
SwedishAmerican Hospital	Rockford	⊙	—
University of Chicago Medical Center	Chicago	—	○
INDIANA			
Community Heart and Vascular Hospital (The Indiana Heart Hospital)	Indianapolis	●	—
Elkhart General Healthcare System	Elkhart	○	—

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HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
INDIANA (continued)			
Franciscan St. Anthony Health - Crown Point	Crown Point	○	—
Franciscan St. Anthony Health - Michigan City	Michigan City	○	—
Franciscan St. Elizabeth Health - Lafayette East	Lafayette	○	—
Franciscan St. Francis Health - Indianapolis	Indianapolis	⊙	○
Indiana University Health Arnett Hospital	Lafayette	○	—
Indiana University Health Ball Memorial Hospital	Muncie	○	○
Indiana University Health Bloomington Hospital	Bloomington	⊙	○
Indiana University Health La Porte Hospital	La Porte	○	—
Indiana University Health University Hospital	Indianapolis	○	○
Lutheran Hospital of Indiana	Fort Wayne	○	○
Memorial Hospital of South Bend	South Bend	○	—
Parkview Regional Medical Center (Parkview Heart Institute)	Fort Wayne	⊙	○
St. Vincent Heart Center of Indiana	Indianapolis	⊙	⊙
St. Vincent Indianapolis Hospital	Indianapolis	○	○
IOWA			
Mercy Iowa City	Iowa City	○	○
Mercy Medical Center - Des Moines	Des Moines	○	●
Mercy Medical Center - Dubuque	Dubuque	○	—
Mercy Medical Center - North Iowa	Mason City	○	○
UnityPoint Health - Allen Hospital	Waterloo	○	○
UnityPoint Health - Iowa Methodist Medical Center	Des Moines	○	○
KANSAS			
Olathe Medical Center	Olathe	○	—
Salina Regional Health Center	Salina	○	—
Stormont-Vail HealthCare	Topeka	⊙	—
KENTUCKY			
Baptist Health Lexington	Lexington	○	—
Baptist Health Madisonville	Madisonville	○	—
Baptist Health Paducah	Paducah	⊙	—
Jewish Hospital	Louisville	●	●

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HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
KENTUCKY (continued)			
King's Daughters Medical Center	Ashland	⊙	—
Lourdes Hospital	Paducah	○	○
Norton Audubon Hospital	Louisville	○	○
Norton Hospital	Louisville	○	○
LOUISIANA			
Baton Rouge General Medical Center	Baton Rouge	○	○
CHRISTUS St. Patrick Hospital of Lake Charles	Lake Charles	●	○
Glenwood Regional Medical Center	West Monroe	○	○
Heart Hospital of Lafayette	Lafayette	○	—
Ochsner Medical Center - Baton Rouge	Baton Rouge	○	○
Our Lady of the Lake Regional Medical Center	Baton Rouge	○	—
MARYLAND			
MedStar Union Memorial Hospital	Baltimore	○	○
Suburban Hospital	Bethesda	○	—
Washington Adventist Hospital	Takoma Park	⊙	—
MASSACHUSETTS			
Baystate Medical Center	Springfield	⊙	⊙
Beth Israel Deaconess Medical Center	Boston	○	○
Boston Medical Center	Boston	○	—
Brigham and Women's Hospital	Boston	○	⊙
Cape Cod Hospital	Hyannis	○	○
Lahey Hospital & Medical Center, Burlington	Burlington	⊙	○
Massachusetts General Hospital	Boston	○	⊙
Mount Auburn Hospital	Cambridge	⊙	○
North Shore Medical Center	Salem	○	○
Saint Vincent Hospital	Worcester	○	○
Southcoast Hospitals Group	Fall River	○	○
Tufts Medical Center	Boston	○	○
UMass Memorial Medical Center	Worcester	⊙	⊙

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HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
MICHIGAN			
Allegiance Health	Jackson	○	○
Beaumont Hospital - Royal Oak	Royal Oak	○	○
Beaumont Hospital - Troy	Troy	○	○
Borgess Medical Center	Kalamazoo	⊙	⊙
Bronson Methodist Hospital	Kalamazoo	○	○
Covenant Medical Center	Saginaw	○	○
Crittenton Hospital Medical Center	Rochester	⊙	○
Genesys Regional Medical Center	Grand Blanc	⊙	○
Henry Ford Hospital	Detroit	⊙	○
Henry Ford Macomb Hospitals	Clinton Township	⊙	○
Lakeland Regional Medical Center - St. Joseph	Saint Joseph	○	○
Marquette General Health System	Marquette	○	○
McLaren Bay Region	Bay City	⊙	—
McLaren Flint	Flint	○	○
McLaren Greater Lansing	Lansing	○	○
McLaren Macomb	Mount Clemens	○	○
McLaren Northern Michigan	Petoskey	⊙	○
Mercy Health Partners, Mercy Campus	Muskegon	○	—
MidMichigan Medical Center - Midland	Midland	○	—
Munson Medical Center	Traverse City	○	—
Oakwood Hospital & Medical Center - Dearborn	Dearborn	○	—
Port Huron Hospital	Port Huron	○	○
Providence Hospital	Southfield	○	○
Sinai-Grace Hospital	Detroit	○	○
Sparrow Hospital	Lansing	○	—
Spectrum Health - Grand Rapids (Meijer Heart Center)	Grand Rapids	⊙	⊙
St. John Hospital and Medical Center	Detroit	○	○
St. John Macomb - Oakland Hospital	Warren	⊙	○
St. Joseph Mercy Hospital	Ypsilanti	⊙	⊙
St. Joseph Mercy Oakland	Pontiac	○	—

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HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
MICHIGAN (continued)			
St. Mary's of Michigan	Saginaw	○	○
University of Michigan Hospitals and Health Centers	Ann Arbor	○	⊙
MINNESOTA			
Abbott Northwestern Hospital	Minneapolis	○	○
Essentia Health St. Mary's Medical Center	Duluth	○	○
Fairview Southdale Hospital	Edina	●	○
Hennepin County Medical Center	Minneapolis	○	○
Mercy Hospital	Coon Rapids	○	○
North Memorial Medical Center	Robbinsdale	●	○
Park Nicollet Methodist Hospital	Saint Louis Park	○	○
Regions Hospital	Saint Paul	○	○
St. Cloud Hospital	Saint Cloud	⊙	—
St. Joseph's Hospital	Saint Paul	○	○
United Hospital	Saint Paul	○	○
University of Minnesota Medical Center, Fairview	Minneapolis	○	○
MISSISSIPPI			
Mississippi Baptist Medical Center	Jackson	○	○
University Hospitals and Health System, University of Mississippi Medical Center	Jackson	○	—
MISSOURI			
Boone Hospital Center	Columbia	⊙	○
Heartland Regional Medical Center	Saint Joseph	○	—
Mercy Hospital Joplin	Joplin	○	—
Missouri Baptist Medical Center	Saint Louis	○	⊙
Poplar Bluff Regional Medical Center	Poplar Bluff	●	○
Saint Francis Medical Center	Cape Girardeau	○	○
Saint Luke's Hospital of Kansas City	Kansas City	○	—
MONTANA			
Billings Clinic	Billings	○	○
St. Patrick Hospital	Missoula	○	○

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HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
NEBRASKA			
Alegent Creighton Health Bergan Mercy Medical Center	Omaha	○	○
Alegent Creighton Health - Creighton University Medical Center	Omaha	○	○
Bryan Medical Center	Lincoln	⊙	○
Good Samaritan Hospital	Kearney	○	—
Nebraska Heart Hospital	Lincoln	⊙	○
Nebraska Medical Center	Omaha	○	—
Nebraska Methodist Hospital	Omaha	○	○
NEVADA			
Desert Springs Hospital Medical Center	Las Vegas	●	●
MountainView Hospital	Las Vegas	○	○
Summerlin Hospital Medical Center	Las Vegas	○	—
University Medical Center	Las Vegas	○	○
Valley Hospital Medical Center	Las Vegas	○	○
NEW HAMPSHIRE			
Catholic Medical Center	Manchester	⊙	○
NEW JERSEY			
AtlantiCare Regional Medical Center	Atlantic City	○	—
Englewood Hospital and Medical Center	Englewood	○	○
Jersey Shore University Medical Center	Neptune	○	○
Morristown Medical Center	Morristown	⊙	○
Valley Hospital	Ridgewood	⊙	⊙
NEW MEXICO			
Presbyterian Hospital	Albuquerque	⊙	—
NEW YORK			
Albany Medical Center	Albany	○	⊙
Ellis Hospital	Schenectady	○	○
Good Samaritan Hospital	Suffern	○	○
Kaleida Health (Gates Vascular Institute at Buffalo General Medical Center)	Buffalo	⊙	⊙
Lenox Hill Hospital	New York	○	—

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HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
NEW YORK (continued)			
Mercy Hospital	Buffalo	⊙	○
Montefiore Medical Center	Bronx	⊙	○
NYU Langone Medical Center	New York	○	○
Rochester General Hospital	Rochester	⊙	○
St. Elizabeth Medical Center	Utica	○	○
St. Joseph's Hospital Health Center	Syracuse	⊙	⊙
St. Peter's Hospital	Albany	○	○
Strong Memorial Hospital of the University of Rochester	Rochester	○	○
Upstate University Hospital	Syracuse	○	—
Westchester Medical Center	Valhalla	○	—
NORTH CAROLINA			
Carolinas Medical Center	Charlotte	⊙	○
Cone Health	Greensboro	⊙	○
Duke University Hospital	Durham	○	⊙
FirstHealth Moore Regional Hospital	Pinehurst	○	—
High Point Regional Health System	High Point	⊙	—
Mission Hospital	Asheville	⊙	—
Novant Health Forsyth Medical Center	Winston-Salem	○	○
Novant Health Presbyterian Medical Center	Charlotte	○	○
University of North Carolina Hospitals	Chapel Hill	○	—
Wake Forest Baptist Medical Center	Winston-Salem	○	○
WakeMed Raleigh Campus	Raleigh	○	—
NORTH DAKOTA			
Altru Health System	Grand Forks	○	○
Essentia Health Fargo (Essentia West - Innovis Health)	Fargo	○	○
Sanford Bismarck	Bismarck	○	○
St. Alexius Medical Center	Bismarck	○	○
OHIO			
Adena Medical Center	Chillicothe	○	—
Affinity Medical Center	Massillon	○	○

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HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
OHIO (continued)			
Akron General Medical Center	Akron	○	—
Aultman Hospital	Canton	⊙	○
Blanchard Valley Hospital	Findlay	○	—
Cleveland Clinic	Cleveland	⊙	⊙
Fairfield Medical Center	Lancaster	○	—
Lake Health	Concord Township	○	○
Lima Memorial Health System	Lima	○	—
Mercy Health - Anderson Hospital	Cincinnati	○	—
Mercy St. Vincent Medical Center	Toledo	○	—
Mount Carmel East Hospital	Columbus	⊙	○
Mount Carmel West Hospital	Columbus	○	○
Northside Medical Center	Youngstown	○	—
Ohio State University Wexner Medical Center	Columbus	○	○
OhioHealth Doctors Hospital	Columbus	○	—
OhioHealth Marion General Hospital	Marion	○	—
ProMedica Toledo Hospital	Toledo	○	○
The University of Toledo Medical Center	Toledo	○	○
OKLAHOMA			
Comanche County Memorial Hospital	Lawton	○	—
Integris Baptist Medical Center	Oklahoma City	●	—
Integris Bass Baptist Health Center	Enid	○	—
Norman Regional Health System	Norman	●	—
Oklahoma Heart Hospital	Oklahoma City	⊙	—
Oklahoma Heart Hospital South Campus	Oklahoma City	○	—
OREGON			
Kaiser Permanente Sunnyside Medical Center	Clackamas	⊙	⊙
Legacy Emanuel Hospital and Health Center	Portland	○	—
Legacy Good Samaritan Hospital and Medical Center	Portland	○	○
McKenzie-Willamette Medical Center	Springfield	○	○
OHSU Hospital	Portland	●	—

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HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
OREGON (continued)			
Providence Portland Medical Center	Portland	○	○
Providence St. Vincent Medical Center	Portland	○	○
Rogue Valley Medical Center	Medford	○	○
Tuality Healthcare	Hillsboro	○	—
PENNSYLVANIA			
Bryn Mawr Hospital	Bryn Mawr	○	—
Butler Health System	Butler	○	○
Chester County Hospital	West Chester	○	—
Conemaugh Memorial Medical Center	Johnstown	○	—
Doylestown Hospital	Doylestown	○	—
DuBois Regional Medical Center	Du Bois	○	—
Excela Health Westmoreland Hospital	Greensburg	⊙	○
Forbes Regional Hospital	Monroeville	○	○
Geisinger Medical Center	Danville	○	—
Geisinger Wyoming Valley Medical Center	Wilkes Barre	○	—
Geisinger - Community Medical Center	Scranton	○	○
Heritage Valley Beaver	Beaver	○	●
Lancaster General Health	Lancaster	○	○
Lankenau Medical Center	Wynnewood	⊙	○
Lehigh Valley Hospital	Allentown	○	⊙
Lehigh Valley Hospital - Muhlenberg	Bethlehem	○	○
Paoli Hospital	Paoli	○	—
Pinnacle Health System	Harrisburg	⊙	—
Pocono Medical Center	East Stroudsburg	○	—
Reading Hospital and Medical Center	West Reading	○	○
Saint Vincent Hospital	Erie	○	—
St. Clair Memorial Hospital	Pittsburgh	○	○
St. Luke's University Hospital - Bethlehem Campus	Bethlehem	○	○
Temple University Hospital	Philadelphia	—	○
The Good Samaritan Hospital	Lebanon	⊙	○

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HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
PENNSYLVANIA (continued)			
UPMC Hamot	Erie	○	○
Washington Hospital	Washington	○	—
Wilkes-Barre General Hospital	Wilkes-Barre	⊙	—
Williamsport Regional Medical Center	Williamsport	○	—
York Hospital	York	⊙	—
SOUTH CAROLINA			
AnMed Health Medical Center	Anderson	○	○
Greenville Memorial Hospital	Greenville	○	—
Hilton Head Hospital	Hilton Head Island	○	—
McLeod Regional Medical Center	Florence	○	—
Providence Hospital	Columbia	⊙	●
Roper Hospital	Charleston	○	—
SOUTH DAKOTA			
Sanford USD Medical Center	Sioux Falls	○	○
TENNESSEE			
Fort Sanders Regional Medical Center	Knoxville	○	○
Jackson-Madison County General Hospital	Jackson	○	—
Johnson City Medical Center	Johnson City	⊙	○
Methodist Medical Center of Oak Ridge	Oak Ridge	○	○
Parkwest Medical Center	Knoxville	⊙	○
Saint Thomas Midtown Hospital	Nashville	○	○
Saint Thomas West Hospital	Nashville	⊙	○
Tristar Centennial Medical Center	Nashville	○	○
University of Tennessee Medical Center	Knoxville	○	○
Wellmont Bristol Regional Medical Center	Bristol	⊙	○
Wellmont Holston Valley Medical Center	Kingsport	○	○
TEXAS			
Baylor All Saints Medical Center at Fort Worth	Fort Worth	○	—
Baylor Medical Center at Garland	Garland	○	—
Baylor Medical Center at Irving	Irving	○	—

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HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
TEXAS (continued)			
Baylor Regional Medical Center at Grapevine	Grapevine	○	○
Baylor University Medical Center	Dallas	○	○
Covenant Medical Center	Lubbock	○	—
Cypress Fairbanks Medical Center	Houston	○	—
Doctor's Hospital at Renaissance	Edinburg	○	○
Lake Pointe Medical Center	Rowlett	○	—
Las Palmas/Del Sol Medical Center	El Paso	●	—
Midland Memorial Hospital	Midland	○	—
Mother Frances Hospital - Tyler	Tyler	⊙	⊙
St. Joseph Regional Health Center	Bryan	○	○
St. Luke's Episcopal Hospital	Houston	—	○
St. Luke's The Woodlands Hospital	The Woodlands	●	○
Texas Health Heart & Vascular Hospital Arlington	Arlington	○	—
The Heart Hospital Baylor Plano	Plano	⊙	⊙
University Medical Center	Lubbock	●	—
University of Texas Southwestern Medical Center (Saint Paul)	Dallas	○	○
UTAH			
Dixie Regional Medical Center	Saint George	○	○
Intermountain Medical Center	Murray	○	○
McKay-Dee Hospital Center	Ogden	⊙	—
Utah Valley Regional Medical Center	Provo	⊙	○
VIRGINIA			
Carilion Medical Center	Roanoke	○	—
Centra Lynchburg General Hospital	Lynchburg	○	○
Inova Alexandria Hospital	Alexandria	○	—
Inova Fairfax Hospital	Falls Church	⊙	—
Mary Washington Hospital	Fredericksburg	⊙	○
Sentara Virginia Beach General Hospital	Virginia Beach	○	○
University of Virginia Medical Center	Charlottesville	○	⊙
Winchester Medical Center	Winchester	○	○

Hospital Ratings Heart Surgery

BELOW AVERAGE ● AVERAGE ○ ABOVE AVERAGE ⊙

HOSPITAL	CITY	CORONARY ARTERY BYPASS SURGERY RATING	AORTIC VALVE REPLACEMENT SURGERY RATING
WASHINGTON			
Harrison Medical Center	Bremerton	○	—
PeaceHealth St. Joseph Medical Center	Bellingham	○	○
Providence Regional Medical Center Everett	Everett	○	○
Providence Sacred Heart Medical Center & Children's Hospital	Spokane	○	—
Providence St. Peter Hospital	Olympia	○	○
St. Joseph Medical Center	Tacoma	○	○
Swedish Medical Center - Cherry Hill Campus	Seattle	⊙	⊙
University of Washington Medical Center	Seattle	○	○
WEST VIRGINIA			
Camden Clark Medical Center	Parkersburg	○	○
Monongalia General Hospital	Morgantown	●	—
West Virginia University Hospitals	Morgantown	○	—
WISCONSIN			
Aspirus Wausau Hospital	Wausau	○	○
Aurora BayCare Medical Center	Green Bay	○	—
Bellin Memorial Hospital	Green Bay	○	○
Columbia St. Mary's Hospital Milwaukee	Milwaukee	○	—
Columbia St. Mary's Ozaukee Hospital	Mequon	○	—
Community Memorial Hospital	Menomonee Falls	○	○
Froedtert Memorial Lutheran Hospital	Milwaukee	○	—
Gundersen Lutheran Medical Center	La Crosse	⊙	○
St. Mary's Hospital	Madison	○	—
University of Wisconsin Hospital and Clinics	Madison	○	○
Waukesha Memorial Hospital	Waukesha	○	—
WYOMING			
Cheyenne Regional Medical Center	Cheyenne	○	○

HEART QUEST Zvi Frankel and his grandfather searched extensively to find the right heart hospital.

Where should you go for heart surgery?

Our new Ratings of more than 400 hospitals can help you find the right one

Last spring, when Zvi Frankel's grandfather learned that a valve in his heart needed to be replaced, he turned to his grandson for help.

The grandfather, who lives in New York City, had to choose between the standard open-heart surgery and a less invasive, high-tech version. The new option, called transcatheter aortic valve replacement, was appealing. He wouldn't have to be placed on a heart-lung machine or have his heart temporarily stopped.

But Frankel and his grandfather wanted to know more. Which worked best long term? Which was safer? And most important, which hospitals and surgeons had the best results? "Doesn't everyone want to know that when they face something as serious as heart surgery?" Frankel asks.

Well, most people probably do want that information. But, as Frankel found out, getting it is far from easy. In fact, Frankel embarked on what turned into a long quest, ending with him writing an article in JAMA Internal Medicine on how difficult it was for consumers to find needed information.

Along the way he found that many hospitals were eager to talk about the benefits of the new procedure, which involves inserting an artificial valve through an incision in the groin and threading it up an artery to the heart. Several hospitals even promoted it in ads or website videos, such as one we found from New York-Presbyterian hospital in New York City narrated by Mehmet Oz, M.D., director of the hospital's Cardiovascular Institute.

But the hospitals and surgeons could not or would not tell Frankel what he most wanted to know. It took weeks poring over medical journals to learn that the limited research to date suggests that although the procedure can be the only option for some very sick people, it may be more likely than the traditional approach to cause some serious complications. He found that those increased risks included the need for a pacemaker and death from aortic regurgitation, triggered when blood leaks around the new valve and back into the heart.

Most difficult was learning how well particular doctors and hospitals performed. In fact, he ended up filing a Freedom of Information Act request with New York state to get success rates for the doctors and hospitals they were considering. Ultimately, his grandfather chose the traditional approach, performed by a surgeon with a good track record at Weill Cornell Medical Center in New York City, according to the data from the state registry. The surgery was a success.

"It shouldn't be so hard," says John Santa, M.D., medical director of Consumer Reports Health, who helped Frankel publish his article. "Not everyone has a grandson like Zvi to act as a full-time medical detective. Hospitals and doctors should make the information accessible and understandable, so families can make informed choices when they make life and death decisions."

Our first ever Ratings of hospitals for heart surgery (see page 34) are an attempt to help you do just that.

Opening up heart data

We rate hospitals on two heart surgeries: surgical aortic valve replacement, the kind chosen by Frankel's grandfather; and

PHOTO: RONNIE ANDREN

coronary artery bypass graft surgery, an equally serious operation done to treat blocked coronary arteries.

The Ratings are based on the gold standard in tracking hospital performance: data from patients' medical records showing whether patients survived the procedure and how they fared on other important measures, including complications. To create a level playing field, the data are adjusted for the health of patients because certain hospitals treat more older, sicker patients than others.

The information comes from the Society of Thoracic Surgeons, which represents physicians who operate on the heart and other organs in the chest. The STS has collected the data for several decades. More than 1,000 U.S. hospitals report to the STS, but only about 400 allowed the organization to share the data with us.

"All hospitals know this information," Santa says. "Those that have agreed to share, especially those with low scores, should be applauded for their commitment to transparency. Those that haven't shared should make it available—otherwise, it seems like they have something to hide."

What we found

Here are some of our main findings:

- Certain famous hospitals are missing. They aren't in our Ratings because they don't share data with us, the STS, or both. That includes two hospitals Frankel's grandfather considered, Columbia-Presbyterian and Weill Cornell. Also on that list: Cedars-Sinai Medical Center in Los Angeles, Johns Hopkins Hospital in Baltimore, and the Mayo Clinic in Rochester, Minn.
- Top hospitals are in surprising places. Only 15 hospitals in our Ratings earned top scores in heart-valve and bypass surgeries. Although the well-known Cleveland Clinic made the list, so did some less familiar hospitals, such as Borgess Medical Center in Kalamazoo, Mich., and Mother Frances Hospital-Tyler in Tyler, Texas. Some are major medical centers; others are smaller. "It's not name or location or ad budget that matters; it's a commitment to quality, and that can happen anywhere," Santa says.
- Performance varies widely, even at neighboring hospitals. We found four metropolitan areas—Indianapolis, Los Angeles,

6 questions to help you find a heart hospital

1. Isn't heart surgery an emergency, so do I have time to research hospitals? If you are having a heart attack, emergency bypass surgery is sometimes necessary. But in most cases heart disease can be stabilized with drugs or simpler procedures, giving you, or a friend or family member, time. Ask your doctor how serious your condition is and how soon you'll need surgery. Valve disease is serious but rarely an emergency, so you will almost always have time.

2. What should I do if my hospital isn't rated? There's a good chance of that happening, because many hospitals did not share data with us. But almost every hospital reports to the Society of Thoracic Surgeons even if the information is not public. Some that do report to the STS give similar data to state registries. So ask your surgeon about the hospital's survival and complication rates. If he or she can't—or won't—share it, consider looking elsewhere.

3. What should I do if no top hospitals are in my community? First, don't panic. A hospital that gets an average rating still provides good care. If all hospitals in your area get low scores or won't share their data, you could travel elsewhere. But check with your insurance to make sure the procedure will be covered at the out-of-town hospital. And realize that you might not have as much support from family and friends. If you choose a lower-rated hospital, discuss your concerns about its score with your surgeon. That can be reassuring and help you prepare for your stay.

4. Do I need to go to a famous hospital or one in a large city to get good care? No. We found top hospitals in bypass and valve surgery in out-of-the-way places. And high-scoring hospitals in one or the other procedure are in all regions of the country.

5. What if my insurer won't cover the hospital I want? If you have original Medicare, you should have no problem, because almost all hospitals accept it. With managed care, including Medicare Advantage, you must use providers in the plan's network or you're likely to pay all or most of the costs out of your own pocket. If the surgery can be postponed for several months, you could consider switching plans for 2015. That may not be possible if you're covered through a job, but if you have Medicare Advantage or a plan you bought through a state marketplace, you can switch plans during the annual fall open enrollment period.

6. What if I also want information about my heart surgeon? That can be difficult to find. Subscribers to our website can see Ratings for heart surgery groups (go to *ConsumerReports.org/heartsurgerygroups)* but not individual doctors. A few states maintain registries for surgeons. (Contact your state's department of health.) But you probably will need to ask your surgeon for the information you want. If he or she won't tell you, consider going elsewhere.

Top-scoring hospitals

Only 15 of the hospitals that share their data with us earned top marks in bypass and valve surgeries (listed alphabetically):

- Baystate Medical Center, Springfield, Mass.
- Borgess Medical Center, Kalamazoo, Mich.
- Cleveland Clinic, Cleveland
- Kaiser Permanente Sunnyside Medical Center, Clackamas, Ore.
- Kaleida Health (Gates Vascular Institute at Buffalo General Medical Center), Buffalo, N.Y.
- Mother Frances Hospital-Tyler, Tyler, Texas
- Sequoia Hospital, Redwood City, Calif.
- Spectrum Health - Grand Rapids (Meijer Heart Center), Grand Rapids, Mich.
- St. Joseph Mercy Hospital, Ypsilanti, Mich.
- St. Joseph's Hospital Health Center, Syracuse, N.Y.
- St. Vincent Heart Center of Indiana, Indianapolis
- Swedish Medical Center-Cherry Hill Campus, Seattle
- The Heart Hospital Baylor Plano, Plano, Texas
- UMass Memorial Medical Center, Worcester, Mass.
- Valley Hospital, Ridgewood, N.J.

Cleveland Clinic, Cleveland

Mother Frances Hospital-Tyler, Tyler, Texas

Oklahoma City, and Portland, Ore.—where there are top- and low-scoring hospitals, sometimes just miles apart. "In those communities, the hospital you choose can really make a difference," Santa says.

• Many hospitals do a good job. Of the hospitals that shared their bypass data with us, 20 percent (83) were above average, 75 percent (310) were average, and 4 percent (18) were below average. The STS has high standards, so hospitals with average scores still do a very good job, says Robbin Cohen, M.D., an associate professor of cardiothoracic surgery at the Keck School of Medicine at the University of Southern California and a member of the STS. Of the 247 hospitals with data on valve surgery, 10 percent (25) got a top score, 87 percent (216) a middle score, and 2 percent (6) the lowest one.

The risks of heart surgery

No one undergoes heart surgery lightly.

Bypass is usually reserved for people with multiple coronary arteries blocked with plaque, which increases the risk of heart attack and causes chest pain and shortness of breath. During the procedure, the surgeon opens the chest, removes part of a healthy vein or artery from another part of the body, and grafts one end of it below the clog and the other end above it, allowing blood flow to bypass the blockage.

Aortic valve replacement is mostly done when the valve in the heart's left chamber accumulates calcium deposits, obstructing blood flow. Over time, the heart fails as it struggles to keep blood pumping.

Even in the hands of skilled surgeons at good hospitals, the procedures can sometimes lead to heart attack, kidney failure, or other problems. After surgery, patients are put on a ventilator, which increases the risk of complications, including pneumonia and other infections.

"No surgeon and no hospital can do heart surgery with zero complications and zero deaths," Cohen says. "Patients undergo heart surgery because the benefits outweigh the risks." But as our Ratings show, results vary among hospitals. So which hospital you choose matters.

Frankel ultimately got enough information to make a decision, but he says that efforts such as our new heart Ratings would have helped. When confronting surgery, people need to know they are making a decision based on facts, Frankel says. "You can choose the best doctor and best hospital, and you still may not have positive results," he says. "But people should be able to know they did everything they possibly could."

Ratings Hospitals for heart surgery

Hospitals in our Ratings that earned a top score in either bypass or heart-valve surgery. In alphabetical order, within state and region.

	Hospital name	City	Heart bypass surgery	Aortic valve replacement surgery
NORTHEAST				
Massachusetts	**Baystate Medical Center**	Springfield	◉	◉
	Brigham and Women's Hospital	Boston	○	◉
	Lahey Hospital & Medical Center, Burlington	Burlington	◉	○
	Massachusetts General Hospital	Boston	○	◉
	Mount Auburn Hospital	Cambridge	◉	○
	UMass Memorial Medical Center	Worcester	◉	◉
New Hampshire	**Catholic Medical Center**	Manchester	◉	○
New Jersey	**Morristown Medical Center**	Morristown	◉	○
	Valley Hospital	Ridgewood	◉	◉
New York	**Albany Medical Center**	Albany	○	◉
	Kaleida Health (Gates Vascular Institute at Buffalo General Medical Center)	Buffalo	◉	◉
	Mercy Hospital	Buffalo	◉	○
	Montefiore Medical Center	Bronx	◉	○
	Rochester General Hospital	Rochester	◉	○
	St. Joseph's Hospital Health Center	Syracuse	◉	◉
Pennsylvania	**Excela Health Westmoreland Hospital**	Greensburg	◉	○
	Lankenau Medical Center	Wynnewood	◉	○
	Lehigh Valley Hospital	Allentown	○	◉
	Pinnacle Health System	Harrisburg	◉	–
	The Good Samaritan Hospital	Lebanon	◉	○
	Wilkes-Barre General Hospital	Wilkes-Barre	◉	–
	York Hospital	York	◉	–
SOUTH				
District of Columbia	**MedStar Washington Hospital Center**	Washington	◉	–
Florida	**Memorial Regional Hospital**	Hollywood	◉	○
	Munroe Regional Medical Center	Ocala	◉	–
	Sarasota Memorial Hospital	Sarasota	◉	○
	St. Joseph's Hospital	Tampa	◉	–
	Venice Regional Medical Center	Venice	◉	○
	Winter Haven Hospital	Winter Haven	◉	○
Georgia	**WellStar Kennestone Hospital**	Marietta	◉	–
Kentucky	**Baptist Health Paducah**	Paducah	◉	–
	King's Daughters Medical Center	Ashland	◉	–
Maryland	**Washington Adventist Hospital**	Takoma Park	◉	–
North Carolina	**Carolinas Medical Center**	Charlotte	◉	○
	Cone Health	Greensboro	◉	○
	Duke University Hospital	Durham	○	◉
	High Point Regional Health System	High Point	◉	–
	Mission Hospital	Asheville	◉	–
Oklahoma	**Oklahoma Heart Hospital**	Oklahoma City	◉	–
South Carolina	**Providence Hospital**	Columbia	◉	●
Tennessee	**Johnson City Medical Center**	Johnson City	◉	○
	Parkwest Medical Center	Knoxville	◉	○
	Saint Thomas West Hospital	Nashville	◉	○
	Wellmont Bristol Regional Medical Center	Bristol	◉	○
Texas	**Mother Frances Hospital-Tyler**	Tyler	◉	◉
	The Heart Hospital Baylor Plano	Plano	◉	◉
Virginia	**Inova Fairfax Hospital**	Falls Church	◉	–
	Mary Washington Hospital	Fredericksburg	◉	○
	University of Virginia Medical Center	Charlottesville	○	◉

● Below average ○ Average ◉ Above average

	Hospital name	City	Heart bypass surgery	Aortic valve replacement surgery
MIDWEST				
Illinois	**Advocate Christ Medical Center**	Oak Lawn	◉	○
	Advocate Condell Medical Center	Libertyville	◉	○
	Advocate Good Samaritan Hospital	Downers Grove	◉	○
	Advocate Sherman Hospital	Elgin	◉	○
	Central DuPage Hospital	Winfield	◉	–
	SwedishAmerican Hospital	Rockford	◉	–
Indiana	**Franciscan St. Francis Health-Indianapolis**	Indianapolis	◉	○
	Indiana University Health Bloomington Hospital	Bloomington	◉	○
	Parkview Regional Medical Center (Parkview Heart Institute)	Fort Wayne	◉	○
	St. Vincent Heart Center of Indiana	Indianapolis	◉	◉
Kansas	**Stormont-Vail HealthCare**	Topeka	◉	–
Michigan	**Borgess Medical Center**	Kalamazoo	◉	◉
	Crittenton Hospital Medical Center	Rochester	◉	○
	Genesys Regional Medical Center	Grand Blanc	◉	○
	Henry Ford Hospital	Detroit	◉	○
	Henry Ford Macomb Hospitals	Clinton Township	◉	○
	McLaren Bay Region	Bay City	◉	–
	McLaren Northern Michigan	Petoskey	◉	○
	Spectrum Health - Grand Rapids (Meijer Heart Center)	Grand Rapids	◉	◉
	St. John Macomb-Oakland Hospital	Warren	◉	○
	St. Joseph Mercy Hospital	Ypsilanti	◉	◉
	University of Michigan Hospitals and Health Centers	Ann Arbor	○	◉
Minnesota	**St. Cloud Hospital**	Saint Cloud	◉	–
Missouri	**Boone Hospital Center**	Columbia	◉	○
	Missouri Baptist Medical Center	Saint Louis	○	◉
Nebraska	**Bryan Medical Center**	Lincoln	◉	○
	Nebraska Heart Hospital	Lincoln	◉	○
Ohio	**Aultman Hospital**	Canton	◉	○
	Cleveland Clinic	Cleveland	◉	◉
	Mount Carmel East	Columbus	◉	○
Wisconsin	**Gundersen Lutheran Medical Center**	La Crosse	◉	○
WEST				
Arizona	**University of Arizona Medical Center-University Campus**	Tucson	◉	○
California	**Mercy Medical Center Redding**	Redding	◉	○
	Mission Hospital	Mission Viejo	◉	○
	Ronald Reagan University of California Los Angeles Medical Center	Los Angeles	○	◉
	Sequoia Hospital	Redwood City	◉	◉
	St. Joseph's Medical Center	Stockton	◉	○
	St. Jude Medical Center	Fullerton	◉	–
	Stanford Hospital and Clinics	Palo Alto	○	◉
New Mexico	**Presbyterian Hospital**	Albuquerque	◉	–
Oregon	**Kaiser Permanente Sunnyside Medical Center**	Clackamas	◉	◉
Utah	**McKay-Dee Hospital Center**	Ogden	◉	–
	Utah Valley Regional Medical Center	Provo	◉	○
Washington	**Swedish Medical Center-Cherry Hill Campus**	Seattle	◉	◉

How we rate hospitals on heart surgery

The data come from the Society of Thoracic Surgeons for hospitals that have agreed to share their data with us.

BYPASS SURGERY RATINGS Reflects a hospital's performance in isolated coronary artery bypass graft surgery, including the open-heart approach and less invasive versions. Overall score is a composite of four measures: survival (percentage of patients who leave the hospital and survive at least 30 days after surgery), complications (percentage of patients who avoid the most serious complications, including needing a second operation, developing a deep chest infection, suffering a stroke or kidney failure, and requiring prolonged ventilation), best surgical technique (percentage of patients who receive at least one graft from an internal mammary artery, located under the breastbone, which improves survival), and right drugs (percentage of patients who receive beta-blockers before and after surgery to control blood pressure and heart rhythm, aspirin to prevent blood clots, and a drug after surgery to lower LDL (bad) cholesterol).

VALVE REPLACEMENT RATINGS Reflects a hospital's performance in surgical aortic valve replacement. Does not include data for transcatheter aortic valve replacement, though the STS has started to collect it. Overall score is a composite of two measures: survival (percentage of patients who leave the hospital and survive at least 30 days after surgery) and complications (percentage of patients who avoid the most serious complications, which are the same as for bypass).

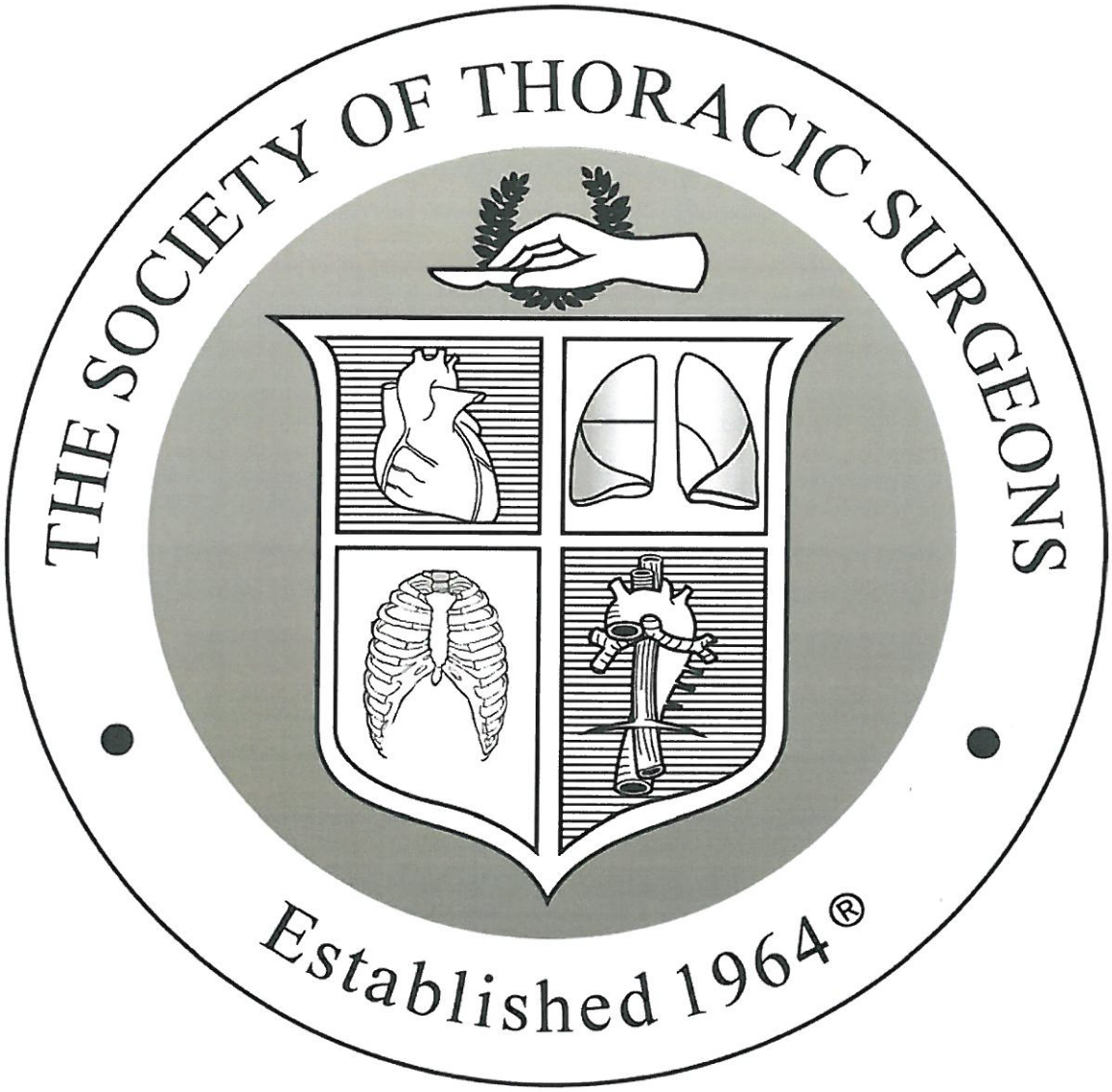
All data were adjusted based on the health of patients. Still, limitations of such adjustments can make direct comparisons difficult.

MORE INFORMATION For details on our methodology, go to *ConsumerReports.org/cro/howweratehospitals*. For our complete hospital Ratings, subscribers to our website can go to *ConsumerReports.org/hospitalratings*.

GET INVOLVED

If your hospital is not in our Ratings, you can help change that. Contact your surgeon, the head of the hospital's cardiac department, and the hospital's CEO. Say that they should report their heart data to the Society of Thoracic Surgeons and that they should let the STS share the data with us. In addition, join our Safe Patient Project (*safepatientproject.org*), which uses the power of thousands of patient advocates to push for safer hospitals and transparent medical information.

DATA ANALYSES OF THE SOCIETY OF THORACIC SURGEONS NATIONAL ADULT CARDIAC SURGERY DATABASE



Duke Clinical Research Institute
DUKE UNIVERSITY MEDICAL CENTER

REVISED May 2014

Period Ending 12/31/2013

Duke Clinical Research Institute
DUKE UNIVERSITY MEDICAL CENTER

April 2014

Dear Society of Thoracic Surgeons (STS) Adult Cardiac Surgery Database Participant:

We are pleased to provide the enclosed *Data Analyses of The Society of Thoracic Surgeons National Adult Cardiac Surgery Database* for the time period ending 12/31/2013. Congratulations are in order as we have for the very first time surpassed the mark of 1000 participants successfully submitting a file for harvest. One thousand nine (1009) participants submitted analyzable files to the Data Warehouse during the STS 2014 Harvest 1. We thank all participants that contributed data to this harvest. Growth in the Adult Cardiac Surgery Database continues, and there are currently 1071 active Participants. The number of international participants continues to grow as we now have surgeons from Brazil, Israel, Turkey and Jordan.
The Data Quality Reports (DQR) that you receive during the data submission window for the harvest provide you with valuable information about your data quality. By examining these reports and addressing problem areas, you will substantially improve the quality of the data that you submit for analysis. Particular attention should be addressed to those fields with missing data that may impact your Star Ratings and NQF Measure results. In addition, STS continues an external audit program, using direct review of source materials, to assess the accuracy and completeness of submitted data. Such audits provide valuable information about the integrity of the data in the Adult Cardiac Surgery Database, and they facilitate interventions to constantly improve data quality. These audits will be increasingly important as the Database is used for various pay-for-performance and public reporting initiatives.

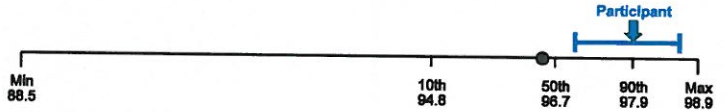
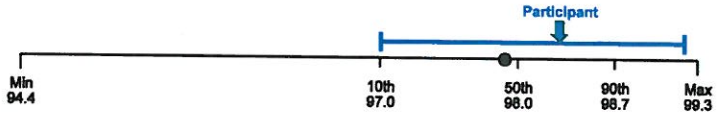
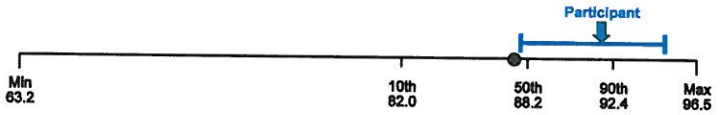
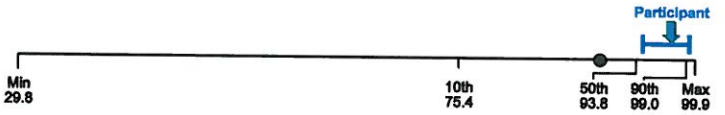
The meeting for users of the Adult Cardiac Surgery Database took place during the Advances in Quality & Outcomes: A Data Managers Meeting, held September 26-28, 2013, in Boston, Massachusetts. An important topic covered was the next specification upgrade that will be mandatory as of July 1, 2014. You should contact your vendor directly to discuss their timeline for upgrading your facility to the latest version of the data specicfications. All data managers are always encouraged to attend this annual event as it is a valuable educational opportunity. The meeting for 2014 is scheduled to be held **October 8-10, 2014, at the Palmer House Hilton in Chicago, IL.** Make plans now to attend. Look for more information about this event on the STS website. Data managers are also encouraged to view the Data Manager Training Module.

On behalf of The Society of Thoracic Surgeons and the Workforce on National Databases, we applaud your dedication, efforts, and enthusiasm in support of the STS Adult Cardiac Surgery Database. You are participating in one of the most highly regarded databases in all of health care. The STS Adult Cardiac Surgery Database has provided the basis for valuable research that improves patient care, and it has also positioned STS to play an increasingly important role in national policy deliberations regarding provider performance measurement and healthcare quality improvement.

STS CABG Composite Quality Rating

Participant 11103
STS Period Ending 12/31/2013

Duke Clinical Research Institute

Quality Domain	Participant Score (98% CI)	STS Mean Participant Score	Participant Rating[1]	Distribution of Participant Scores ● = STS Mean
Jan 2013 - Dec 2013 Overall	97.9% (97.0 , 98.6)	96.5%	★★★	
Jan 2013 - Dec 2013 Absence of Mortality	98.3% (97.0 , 99.2)	97.9%	★★	
Jan 2013 - Dec 2013 Absence of Morbidity[2]	91.8% (87.8 , 94.9)	87.5%	★★★	
Jan 2013 - Dec 2013 Use of IMA[2]	99.0% (97.0 , 99.8)	98.2%	★★	
Jan 2013 - Dec 2013 Medications[2]	97.4% (94.4 , 99.2)	90.0%	★★★	

[1]* = Participant performance is significantly lower than the STS mean based on 99% Bayesian probability
* * = Participant performance is not significantly different than the STS mean based on 99% Bayesian probability
* * * = Participant performance is significantly higher than the STS mean based on 99% Bayesian probability
[2]Please refer to Report Overview - STS Composite Quality Rating and NQF-Endorsed Measures for full details

STS CABG Composite Quality Rating
Domain Details

Participant 11103
STS Period Ending 12/31/2013

Duke Clinical Research Institute

Quality Domain	Eligible Procedures	Detail	Count	Percent of Morbidity/Failure[1]
Jan 2013 - Dec 2013 Absence of Mortality	213	Mortality	2	
Jan 2013 - Dec 2013 Absence of Morbidity[2]	213	Any Morbidity	17	
		Reoperation only[3]	3	17.6%
		Renal Failure only[4]	0	0.0 %
		Deep Sternal Infection/Mediastinitis only	0	0.0 %
		Prolonged Ventilation only	8	47.1%
		Cerebrovascular Accident only	1	5.9 %
		Multiple Morbidities	5	29.4%
Jan 2013 - Dec 2013 Use of IMA[5]	206	IMA Failures	2	
Jan 2013 - Dec 2013 Medications[6]	213	Failed to Prescribe all eligible NQF-Endorsed Medications	5	
		Only Failed to Prescribe Preoperative Beta Blockade	1	20.0%
		Only Failed to Prescribe Discharge Beta Blockade[7]	1	20.0%
		Only Failed to Prescribe Discharge Anti-Lipids[7]	3	60.0%
		Only Failed to Prescribe Discharge Anti-Platelets[8]	0	0.0 %
		Failed to Prescribe Multiple Medications	0	0.0 %

[1]Percentages represent the proportion that the specific morbidity or process non-compliance contributed to the total number of patients for whom credit was not received for these 'all/any or none' bundles. This information is intended to facilitate and focus process and quality improvement initiatives by providers.

[2]Includes Reoperations, Renal Failure, Deep Sternal Infection/Mediastinitis, Prolonged Ventilation, and CVA

[3]Includes Reoperations for Bleeding/Tamponade, Valvular Dysfunction, Graft Occlusion, and Other Cardiac Problems

[4]Excludes patients with preop Renal Failure or Last Creatinine > 4.

[5]Excludes patients with prior CABG surgery and contraindications for IMA. Refer to Report Overview for definitions.

[6]Includes Preoperative Beta Blockade, Discharge Beta Blockade, Discharge Anti-Lipids, and Discharge Anti-Platelets. Excludes contraindicated / not indicated records.

[7]Excludes in-hospital mortalities

[8]Anti-platelet use includes Aspirin and ADP Inhibitors, and excludes in-hospital mortalities

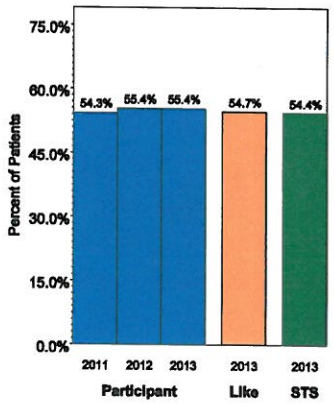
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

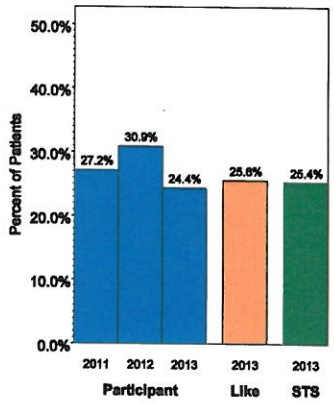
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Number of Cases	254	233	213	42,833	145,934
Demographics					
Age (years)					
Mean	65.4	65.5	65.4	65.2	65.1
Median	65.0	66.0	66.0	66.0	66.0
25th Percentile	58.0	58.0	59.0	58.0	58.0
75th Percentile	72.0	73.0	73.0	73.0	73.0
Age >= 65 years old	54.3%	55.4%	55.4%	54.7%	54.4%
Gender, Female	27.2%	30.9%	24.4%	25.6%	25.4%
Missing	0.0%	0.0%	0.0%	0.0%	0.0%
Race[1]					
Caucasian	53.5%	56.7%	58.7%	87.3%	85.0%
Black	30.3%	24.5%	20.2%	6.3%	7.5%
Asian	13.0%	13.3%	14.6%	2.4%	2.9%
Native American	0.0%	0.0%	0.5%	1.1%	0.8%
Native Hawaiian/Pacific Islander	0.0%	0.9%	0.0%	0.4%	0.4%
Other	4.7%	6.9%	0.0%	2.0%	3.3%
Multiple Races	1.6%	3.0%	0.0%	1.0%	1.0%
Missing	0.0%	0.9%	6.1%	1.5%	1.3%
Hispanic or Latino Ethnicity	4.3%	4.7%	6.6%	5.3%	6.2%
Missing	0.0%	0.0%	0.0%	0.1%	0.4%
Body Mass Index[2]					
Underweight (BMI < 18.5)	0.0%	0.9%	0.5%	0.7%	0.7%
Normal (BMI 18.5 - 24.9)	26.0%	24.0%	23.5%	18.4%	18.7%
Overweight (BMI 25.0 - 29.9)	35.0%	36.5%	36.6%	37.0%	36.9%
Obese I (BMI 30.0 - 34.9)	24.0%	25.8%	23.0%	26.3%	26.2%
Obese II (BMI 35.0 - 39.9)	9.8%	11.2%	8.0%	11.3%	11.2%
Morbid Obesity (BMI 40.0+)	5.1%	1.7%	8.5%	6.2%	6.1%
Missing Height	0.0%	0.0%	0.0%	0.0%	0.1%
Missing Weight	0.0%	0.0%	0.0%	0.0%	0.0%

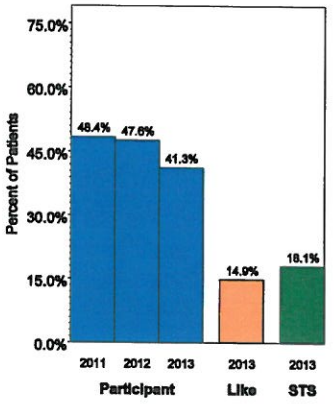
Age >= 65



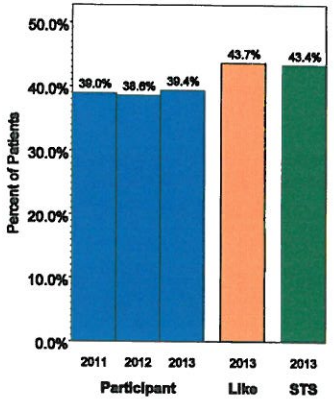
Gender, Female



Race, Non-Caucasian



Obesity (BMI 30+)



[1]Data presented in the report represent the individual response rates for each race category shown; summing the individual non-caucasian categories will not result in the same rates as shown in the graph since non-caucasian, as defined for the graph, does not include races or ethnicities reported in combination with caucasian

[2]BMI = Weight(kg) / Height(m)^2

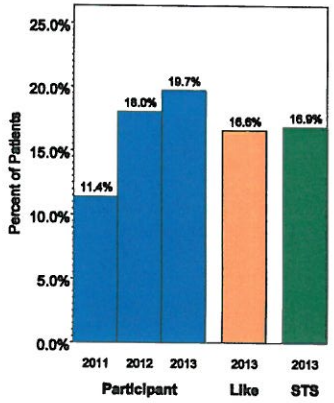
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

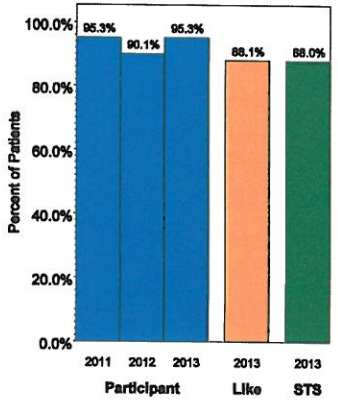
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Comorbidities					
Diabetes Mellitus	44.9%	48.9%	51.6%	45.8%	45.7%
Diet Control	2.0%	3.0%	1.4%	2.8%	2.8%
Oral Control	26.0%	19.7%	24.9%	21.6%	21.3%
Insulin Control	11.4%	18.0%	19.7%	16.6%	16.9%
Other Control	0.0%	0.0%	0.5%	0.1%	0.1%
Missing Control	0.0%	0.0%	0.0%	0.1%	0.2%
Missing	0.0%	0.0%	0.0%	0.1%	0.1%
Hypertension	**95.3%**	90.1%	**95.3%**	88.1%	88.0%
Missing	0.0%	0.0%	0.0%	0.0%	0.1%
Dyslipidemia	94.9%	92.7%	89.2%	87.8%	87.3%
Missing	0.0%	0.0%	0.0%	0.0%	0.1%
Family History of CAD	23.2%	17.6%	10.3%	24.5%	26.6%
Missing	0.0%	0.0%	0.0%	0.6%	0.4%
Current/Recent Cigarette Smoker	43.7%	39.1%	20.2%	31.9%	32.0%
Missing	0.0%	0.0%	0.0%	0.0%	0.2%
Chronic Lung Disease					
Mild	19.7%	16.7%	23.9%	14.4%	13.7%
Moderate	10.6%	8.6%	6.6%	5.7%	6.2%
Severe	9.8%	6.4%	8.5%	4.5%	4.4%
Missing	0.0%	0.0%	0.0%	0.1%	0.3%
Congestive Heart Failure	13.8%	14.2%	10.3%	16.7%	18.1%
CHF / NYHA Class I[1]	0.0%	0.4%	0.0%	1.6%	1.6%
CHF / NYHA Class II	1.6%	2.1%	2.8%	4.4%	5.0%
CHF / NYHA Class III	4.7%	4.3%	2.3%	6.1%	6.6%
CHF / NYHA Class IV	7.5%	7.3%	4.7%	4.3%	4.3%
CHF / Missing Class	0.0%	0.0%	4.5%	2.5%	3.2%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Peripheral Arterial Disease	15.0%	14.6%	12.2%	14.1%	14.1%
Missing	0.0%	0.0%	0.0%	0.0%	0.2%

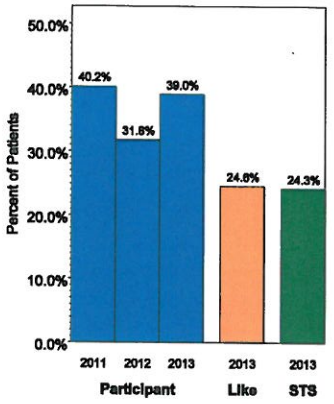
Diabetes, Insulin Dependent



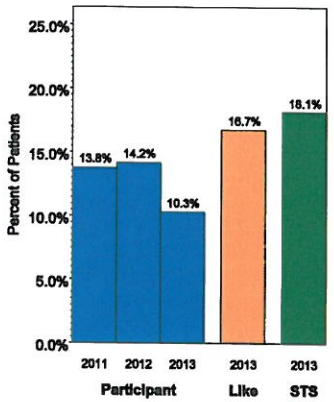
Hypertension



Chronic Lung Disease, Any



Congestive Heart Failure



[1]NYHA Class is only collected for patients with CHF
% represents proportion of cases that had both CHF and the indicated NYHA class

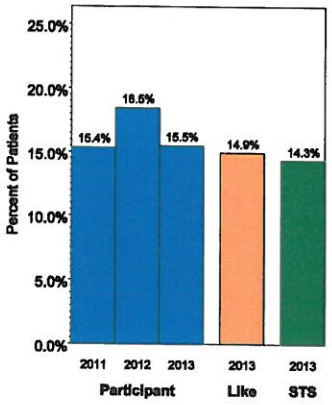
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

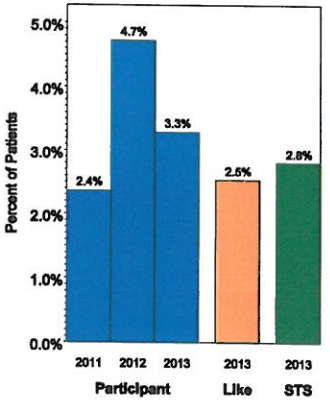
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Cerebrovascular Disease	15.4%	18.5%	15.5%	14.9%	14.3%
Missing	0.0%	0.0%	0.0%	0.0%	0.1%
Coma/Nonresponsive State	0.0%	0.0%	0.5%	0.2%	0.2%
Missing	0.0%	0.0%	0.0%	0.5%	0.6%
CVD TIA	3.5%	7.3%	3.8%	4.6%	4.2%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Carotid Stenosis[1]	3.9%	2.6%	3.3%	2.6%	2.6%
Missing	0.0%	0.0%	0.0%	0.6%	0.6%
CVD Prior Carotid Surgery	2.4%	2.6%	3.3%	3.8%	3.8%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Cerebrovascular Accident	8.7%	9.0%	8.0%	7.2%	7.2%
Missing	0.0%	0.0%	0.0%	0.0%	0.2%
Dialysis-Dependent	2.4%	4.7%	3.3%	2.5%	2.8%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Last Creatinine Preop					
Mean	1.3	1.4	1.3	1.2	1.2
Median	1.1	1.1	1.1	1.0	1.0
25th Percentile	0.9	1.0	1.0	0.8	0.8
75th Percentile	1.3	1.3	1.3	1.2	1.2
Missing	0.0%	0.0%	0.0%	0.1%	0.3%
Value > 4.0 mg/dL	2.0%	3.9%	1.9%	2.1%	2.3%
Immunosuppressive Treatment	2.8%	4.3%	3.8%	2.6%	2.7%
Missing	0.0%	0.0%	0.0%	0.0%	0.2%
Previous Interventions					
Previous Cardiac Surgery[2]	3.1%	0.9%	1.9%	4.8%	5.0%
First reoperation	3.1%	0.9%	1.9%	4.6%	4.9%
Previous CAB	2.0%	0.0%	1.4%	2.8%	2.7%
Previous AICD	0.4%	1.7%	3.8%	1.0%	1.0%
Previous Pacemaker	2.0%	1.3%	4.7%	2.1%	2.0%

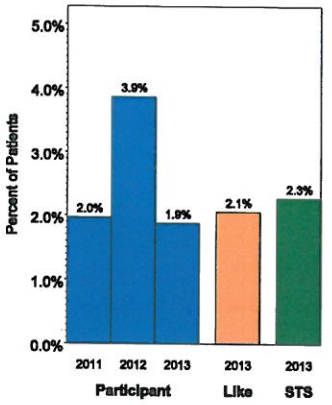
Cerebrovascular Disease



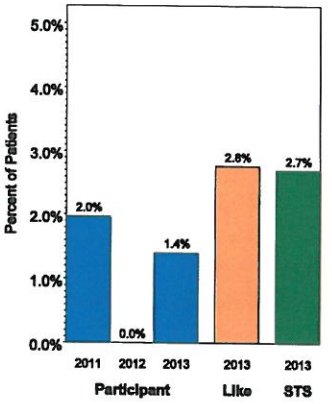
Dialysis



Last Creatinine Preop > 4.0



Previous CAB



[1]Defined as occlusion of either carotid artery >75% for v2.61 and >79% for v2.73
[2]Previous cardiac surgery reflects any prior CAB, valve, or other cardiac surgery

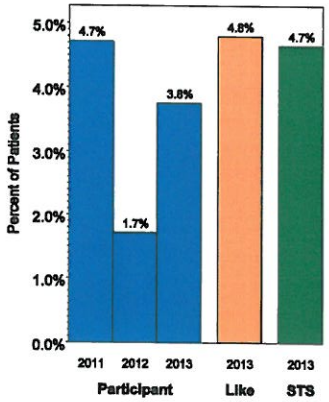
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

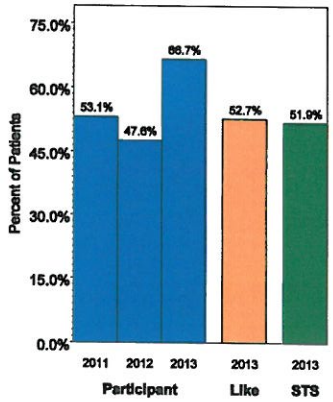
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Previous PCI	26.4%	20.6%	34.3%	29.4%	29.2%
<= 6 hours prior to surgery	1.6%	**0.0%**	1.4%	1.1%	1.1%
> 6 hours prior to surgery	24.8%	20.6%	32.9%	28.3%	28.1%
Missing timing	0.0%	0.0%	0.0%	0.1%	0.3%
Previous PCI Stent	85.1%	89.6%	69.9%	85.7%	85.7%
Status					
Surgery Status					
Elective	26.4%	29.2%	22.1%	35.9%	38.3%
Urgent	68.9%	69.1%	74.2%	59.3%	57.0%
Emergent	4.3%	1.7%	3.8%	4.7%	4.5%
Emergent Salvage	0.4%	**0.0%**	**0.0%**	0.1%	0.1%
Missing	0.0%	0.0%	0.0%	0.0%	0.1%
MI	53.1%	47.6%	66.7%	52.7%	51.9%
<= 7 days prior to surgery	27.2%	23.6%	34.7%	29.6%	29.0%
8-21 days prior to surgery	3.9%	4.3%	7.5%	4.6%	4.6%
>21 days prior to surgery	22.0%	19.7%	24.4%	18.4%	18.2%
Missing timing	0.0%	0.0%	0.0%	0.1%	0.2%
Missing	0.0%	0.0%	0.0%	0.0%	0.1%
Cardiogenic Shock	2.8%	1.7%	1.4%	1.7%	1.8%
Missing	0.0%	0.0%	0.0%	0.0%	0.2%
Resuscitation	1.2%	0.4%	0.5%	0.6%	0.8%
Missing	0.0%	0.0%	0.0%	0.0%	0.2%
Cardiac Pres. on Admission					
No Symptoms or Angina	22.8%	16.7%	13.6%	11.3%	11.9%
Symptoms Unlikely to be Ischemia	0.8%	1.7%	0.0%	1.8%	2.1%
Stable Angina	14.2%	18.9%	9.4%	15.4%	17.1%
Unstable Angina	31.5%	35.2%	37.6%	40.5%	38.2%
Non-ST Elevation MI (Non-STEMI)	21.7%	22.7%	31.9%	25.1%	24.6%
ST Elevation MI (STEMI)	9.1%	4.7%	7.5%	5.9%	5.8%
Missing	0.0%	0.0%	0.0%	0.1%	0.4%

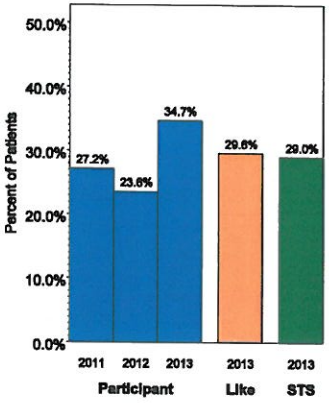
Emergent or Salvage Status



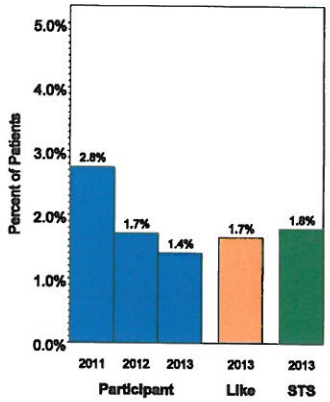
Prior MI



MI within 7 days



Cardiogenic Shock



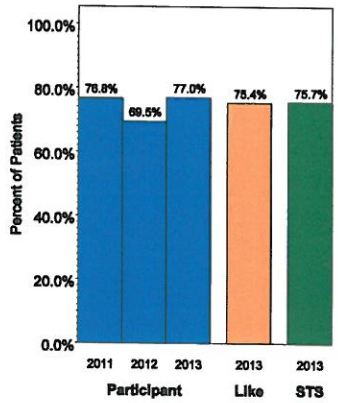
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

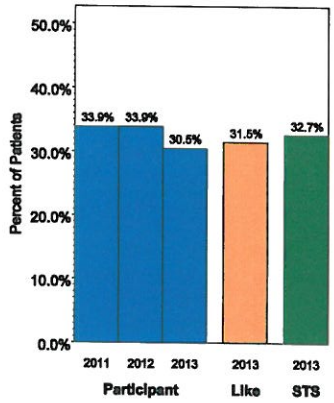
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Any Arrhythmia[1]	9.1%	9.4%	10.8%	13.2%	12.9%
Recent	4.7%	8.2%	8.5%	9.4%	9.5%
Remote	0.4%	1.3%	2.3%	3.8%	3.4%
Missing	0.0%	0.0%	0.0%	0.4%	0.4%
Ventricular Tachycardia/Fibrillation[2]	3.1%	2.6%	3.3%	2.4%	2.6%
Missing	0.0%	0.0%	0.0%	0.2%	0.3%
3rd degree Heart Block[2]	0.0%	0.4%	0.5%	0.4%	0.4%
Missing	0.0%	0.0%	0.0%	0.2%	0.3%
Atrial Fibrillation/Flutter[2]	6.3%	4.7%	6.1%	6.7%	6.7%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Hemodynamics and Catheterization					
Number of Diseased Coronary Vessels					
One	3.5%	4.3%	1.9%	4.3%	4.1%
Two	19.7%	26.2%	21.1%	19.9%	19.7%
Three	76.8%	69.5%	77.0%	75.4%	75.7%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Left Main Disease (>50% Stenosis)	33.9%	33.9%	30.5%	31.5%	32.7%
Missing	0.0%	0.0%	0.0%	0.1%	0.3%
Ejection Fraction					
Mean	50.0	50.2	49.7	51.5	51.6
Median	53.0	55.0	50.0	55.0	55.0
25th Percentile	40.0	43.0	40.0	45.0	45.0
75th Percentile	60.0	60.0	60.0	60.0	60.0
EF missing or not measured	1.2%	0.9%	0.9%	2.1%	2.9%
EF <40%[3]	19.9%	16.9%	16.6%	16.1%	15.8%
Pulmonary Hypertension[4]	20.0%	21.6%	7.7%	35.8%	37.1%
PA mean/systolic pressure missing or not measured	96.1%	84.1%	57.3%	63.9%	65.2%
Aortic Stenosis	4.3%	1.7%	4.2%	2.6%	2.5%
N/A[5]	46.7%	-	-	-	-
Missing	0.0%	0.0%	1.4%	3.4%	2.6%

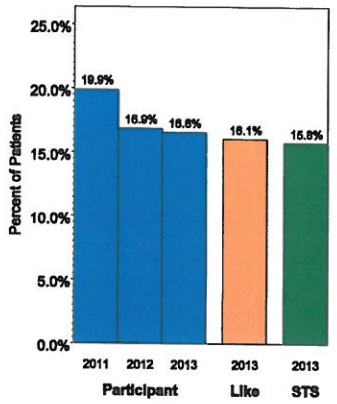
Triple Vessel Disease



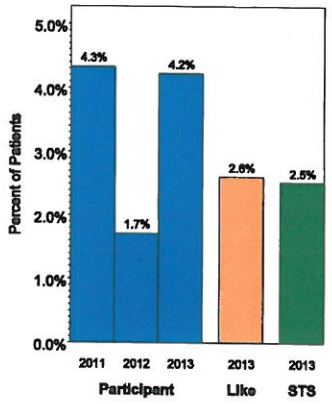
Left Main Disease



Ejection Fraction <40%



Aortic Stenosis



[1]For v2.73 data, preoperative arrhythmia is split into recent and remote
[2]For v2.73 data, the time frame for arrhythmias was changed from 2 weeks to 30 days
[3]Among patients with measured EF
[4]PA mean pressure > 30mmHg (v2.61) or PA systolic pressure > 35mmHg (v2.73)
[5]For v2.73 data, the N/A option was deleted

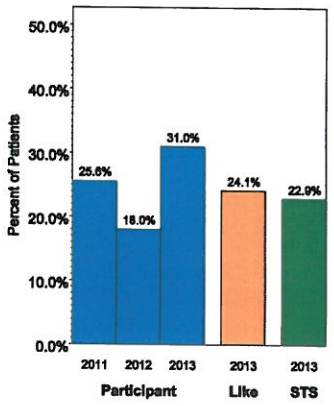
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

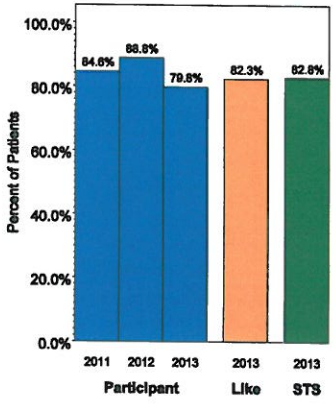
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Mitral Insufficiency					
Trivial	6.7%	4.7%	39.9%	15.9%	15.8%
Mild	15.7%	12.4%	24.4%	18.5%	17.5%
Moderate	8.7%	4.7%	5.2%	5.3%	5.0%
Severe	1.2%	0.9%	1.4%	0.3%	0.4%
N/A[1]	47.4%	-	-	-	-
Missing	0.0%	0.0%	0.0%	0.4%	0.2%
Preoperative Medications					
Aspirin	84.3%	88.8%	79.8%	82.3%	82.8%
Among Eligible Cases	84.6%	88.8%	79.8%	82.3%	82.8%
Contraindicated / Not Indicated[2]	0.4%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.0%	0.2%
Inotropics	2.8%	2.6%	1.4%	1.3%	1.4%
Among Eligible Cases	2.8%	2.6%	1.4%	1.3%	1.4%
Contraindicated / Not Indicated[2]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.0%	0.6%
Beta Blockers	88.6%	90.6%	89.7%	91.2%	89.2%
Among Eligible Cases	97.8%	98.6%	99.5%	96.4%	94.3%
Contraindicated / Not Indicated	7.9%	8.2%	9.4%	4.7%	4.8%
Missing	0.0%	0.0%	0.0%	0.0%	0.1%
Steroids	3.1%	2.6%	1.4%	2.5%	2.7%
Among Eligible Cases	3.1%	2.6%	1.4%	2.5%	2.7%
Contraindicated / Not Indicated[2]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.0%	0.6%
Nitrates IV	17.3%	11.2%	10.3%	11.0%	10.9%
Among Eligible Cases	17.4%	11.2%	10.3%	11.0%	10.9%
Contraindicated / Not Indicated[2]	0.4%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.7%
ACE Inhibitors	34.6%	38.6%	26.8%	43.8%	44.6%
Among Eligible Cases	35.2%	38.6%	26.8%	43.8%	44.6%
Contraindicated / Not Indicated[2]	1.6%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%

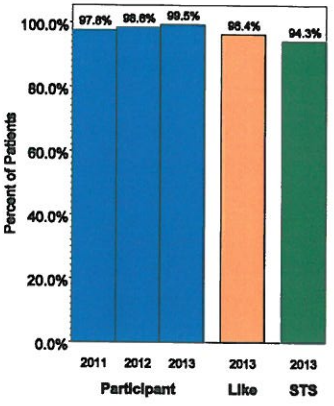
Mitral Insufficiency, Mild+



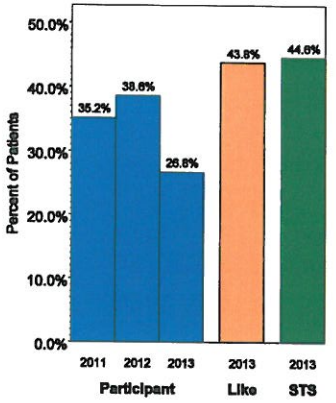
Preoperative Aspirin



Preoperative Beta Blocker



Preoperative ACE Inhibitors



[1]For v2.73 data, the N/A option was deleted

[2]For v2.73 data, the Contraindicated/Not Indicated option was deleted

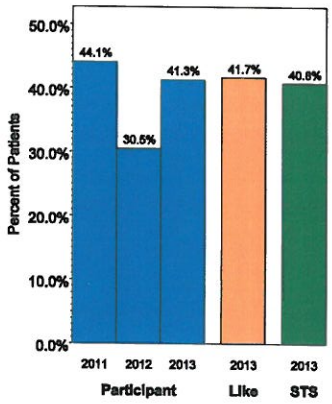
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

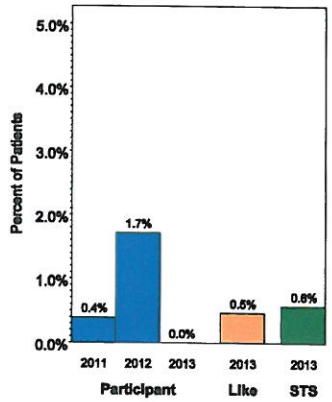
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Anticoagulants	44.1%	30.5%	41.3%	41.7%	40.8%
Among Eligible Cases	44.1%	30.5%	41.3%	41.7%	40.8%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.0%	0.2%
Coumadin	0.4%	1.7%	0.0%	0.5%	0.6%
Among Eligible Cases	0.4%	1.7%	0.0%	0.5%	0.6%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.0%	0.3%
Lipid-Lowering agents	64.2%	75.5%	62.0%	76.0%	77.5%
Among Eligible Cases	64.9%	75.5%	62.0%	76.0%	77.5%
Contraindicated / Not Indicated[1]	1.2%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.0%	0.2%
Glycoprotein IIb/IIIa Inhibitor	5.1%	3.4%	4.7%	2.5%	2.8%
Among Eligible Cases	5.1%	3.4%	4.7%	2.5%	2.8%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.0%	0.3%
ADP Inhibitors within 5 Days	30.7%	26.6%	21.1%	12.2%	11.6%
Among Eligible Cases	30.7%	26.6%	21.1%	12.2%	11.6%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.3%
ADP Inhibitor Discontinuation[2]					
< 1 Day	17.9%	22.6%	31.1%	17.7%	16.0%
1 Day	15.4%	12.9%	8.9%	19.5%	19.8%
2 Days	7.7%	16.1%	11.1%	17.6%	18.0%
3 Days	14.1%	12.9%	31.1%	17.1%	17.4%
4 Days	19.2%	27.4%	17.8%	18.3%	17.7%
5 Days	25.6%	8.1%	0.0%	9.4%	9.6%
Missing	0.0%	0.0%	0.0%	0.4%	1.6%
Antiplatelets within 5 Days	0.4%	6.0%	0.5%	4.2%	4.8%
Among Eligible Cases	0.4%	6.0%	0.5%	4.2%	4.8%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.0%	0.3%

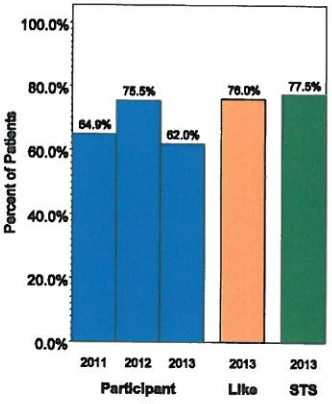
Preoperative Anticoagulants



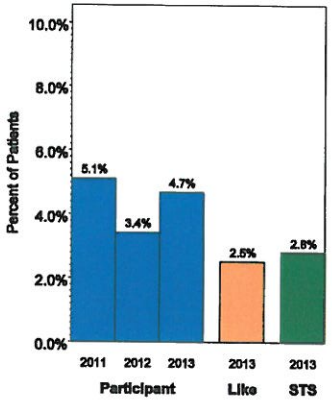
Preoperative Coumadin



Preoperative Lipid-Lowering Agent



Preoperative GP IIb-IIIa Inhibitors



[1]For v2.73 data, the Contraindicated/Not Indicated option was deleted
[2]Excludes patients not on ADP Inhibitors within 5 Days

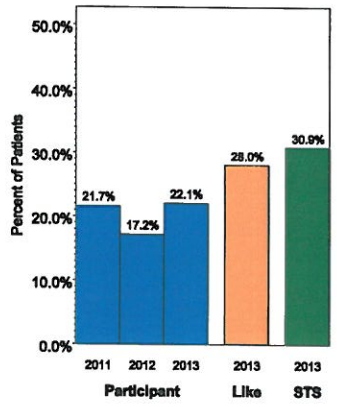
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

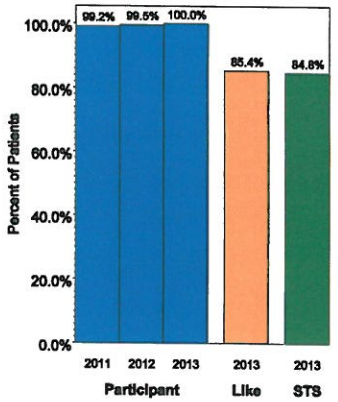
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Operative Information					
Blood Products Used	21.7%	17.2%	22.1%	28.0%	30.9%
Number of Blood Product Units Used					
1 Red Blood Cell Unit	6.7%	2.1%	3.3%	6.2%	6.6%
2 Red Blood Cell Units	5.5%	4.7%	6.1%	8.7%	9.4%
3 Red Blood Cell Units	0.0%	0.9%	1.4%	3.0%	3.3%
4+ Red Blood Cell Units	2.4%	0.9%	1.4%	3.4%	3.8%
1+ Fresh Frozen Plasma Units	4.3%	2.1%	0.5%	6.5%	8.4%
1+ Cryoprecipitate Units	3.5%	0.4%	0.5%	2.0%	2.3%
1+ Platelet Units	13.4%	11.6%	12.7%	13.3%	14.9%
Missing	0.0%	0.0%	0.0%	0.1%	0.1%
Number of Distal Anastamoses, Total					
1	4.7%	3.9%	2.8%	5.9%	5.5%
2	13.8%	15.0%	17.8%	17.4%	17.6%
3	40.6%	33.5%	34.3%	38.1%	38.4%
4	31.9%	34.3%	37.1%	27.9%	27.7%
5+	9.1%	13.3%	8.0%	10.2%	9.8%
Missing[1]	0.0%	0.0%	0.0%	0.5%	1.0%
Anastomotic Device Used[2]	0.0%	-	-	-	-
Missing	0.0%	-	-	-	-
Vein Harvest Technique[3]					
Endovascular/Endoscopic	99.2%	99.5%	100.0%	85.4%	84.8%
Direct Vision	0.8%	0.5%	0.0%	11.6%	12.4%
Both	0.0%	0.0%	0.0%	1.6%	1.9%
Cryopreserved[4]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	1.3%	0.8%
Internal Mammary Artery Used[5]					
Any	97.6%	98.7%	99.0%	98.6%	98.4%
Left	94.3%	94.4%	94.7%	93.7%	93.2%
Right	0.0%	0.4%	0.5%	0.5%	0.5%
Both	3.2%	3.9%	3.9%	4.4%	4.7%
Missing	0.0%	0.0%	0.0%	0.1%	0.1%
Radial Artery Used	2.0%	0.9%	2.8%	5.4%	4.2%
Missing	0.0%	0.0%	0.0%	1.2%	2.1%

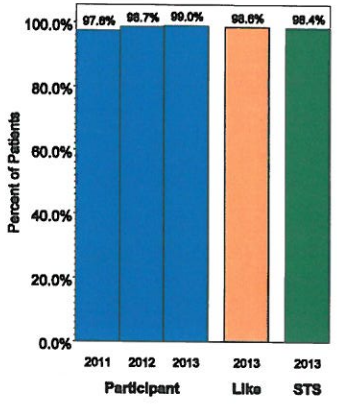
Intraop Blood Products Used



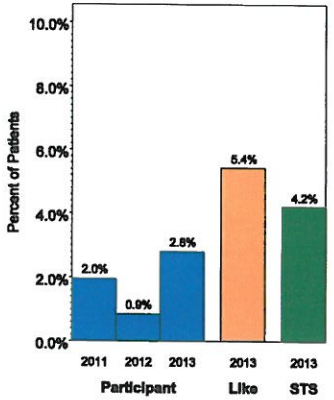
Endovascular Vein Harvest Technique



Internal Mammary Artery Used



Radial Artery Used



[1]Where number of arterial conduits and number of vein grafts both missing
[2]Variable eliminated for v2.73 data
[3]Where at least 1 vein was harvested
[4]New option for v2.73 data
[5]Excludes patients with prior CABG surgery

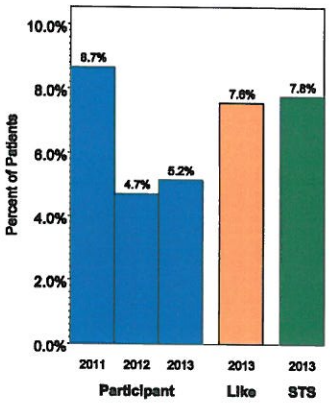
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

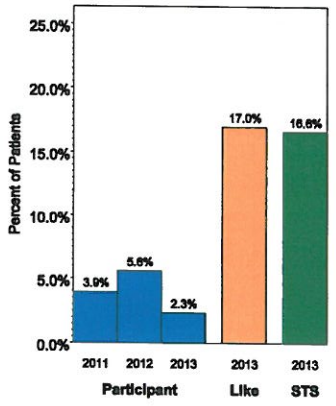
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Radial Artery Harvest Technique					
Endovascular/Endoscopic	0.0%	0.0%	33.3%	38.5%	33.9%
Direct Vision	100.0%	100.0%	33.3%	57.1%	60.2%
Both	0.0%	0.0%	0.0%	0.6%	0.5%
Missing	0.0%	0.0%	33.3%	3.9%	5.4%
IABP Used	12.2%	6.9%	7.5%	9.4%	10.0%
Preop	8.7%	4.7%	5.2%	7.6%	7.8%
Intraop	2.0%	1.3%	1.9%	1.6%	1.9%
Postop	1.6%	0.9%	0.5%	0.3%	0.4%
Missing timing	0.0%	0.0%	0.0%	0.1%	0.1%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Robotic Technology Assisted	0.0%	0.0%	0.0%	1.5%	1.1%
Missing	0.0%	0.0%	0.0%	1.0%	1.4%
Off-pump Procedure (see following section for detail)	3.9%	5.6%	2.3%	17.0%	16.6%
Cross-Clamp Time (min)					
Mean	52.3	55.0	56.9	65.1	68.4
Median	50.0	52.0	54.5	61.0	64.0
25th Percentile	38.0	43.0	43.0	46.0	47.0
75th Percentile	62.0	65.0	69.0	80.0	85.0
Cardiopulmonary Bypass Time (min)					
Mean	81.5	80.0	85.0	91.4	95.4
Median	76.0	78.5	81.0	86.0	90.0
25th Percentile	64.0	64.5	66.0	67.0	69.0
75th Percentile	94.5	92.5	98.5	110.0	115.0
Circulatory Arrest	0.0%	0.0%	0.0%	0.2%	0.1%
Missing	0.0%	0.0%	0.0%	0.8%	1.6%
Circulatory Arrest Time (min)					
Mean	-	-	-	40.8	28.9
Median	-	-	-	38.0	14.0
25th Percentile	-	-	-	8.0	3.0
75th Percentile	-	-	-	59.0	50.0

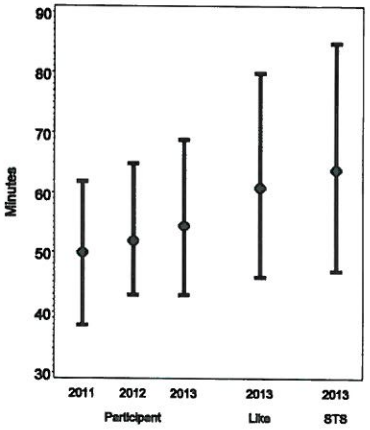
Preoperative IABP



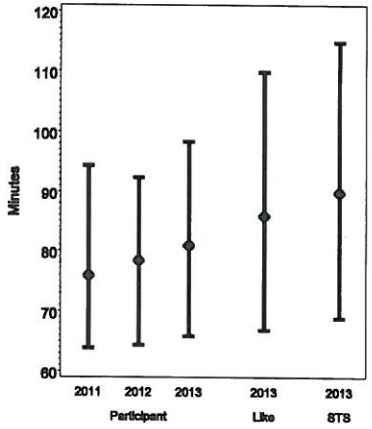
Off-Pump Procedure



Cross-Clamp Time (min)
Median + 25th/75th Percentiles



CPB Time (min)
Median + 25th/75th Percentiles



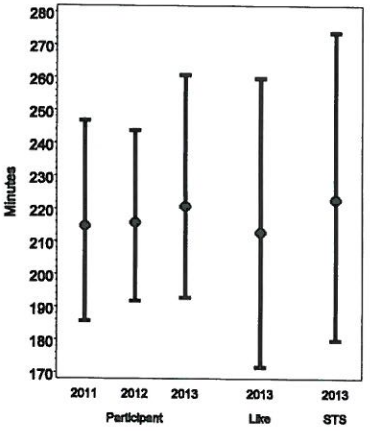
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

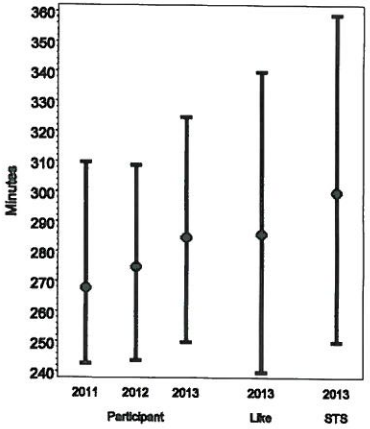
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Skin Incision Duration (min)					
Mean	221.3	219.8	227.9	220.5	231.7
Median	215.0	216.0	221.0	213.0	223.0
25th Percentile	186.0	192.0	193.0	172.0	180.0
75th Percentile	247.0	244.0	261.0	260.0	274.0
OR Duration (min)					
Mean	280.4	281.6	289.0	295.7	310.1
Median	268.0	275.0	285.0	286.0	300.0
25th Percentile	243.0	244.0	250.0	240.0	250.0
75th Percentile	310.0	309.0	325.0	340.0	359.0
Antibiotic Selection[1, 2]	99.2%	99.6%	100.0%	99.0%	98.4%
Exclusions	0.0%	0.4%	0.0%	1.0%	1.4%
Missing	0.0%	0.0%	0.0%	0.6%	1.2%
Antibiotic Timing[1, 3]	97.2%	97.0%	99.5%	98.9%	98.2%
Exclusions	0.0%	0.9%	0.0%	0.6%	0.5%
Missing	0.0%	0.0%	0.0%	0.7%	1.2%
Antibiotics Discontinued[1,4]	99.2%	99.6%	100.0%	97.4%	97.4%
Exclusions	0.0%	0.4%	0.9%	1.2%	1.4%
Missing	0.0%	0.0%	0.0%	0.8%	1.3%
Clotting Agents[5]	98.0%	97.9%	96.2%	77.3%	78.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.5%
Postoperative Information					
Blood Products Used	31.1%	31.8%	26.3%	32.2%	34.4%
Number of Blood Product Units Used					
1 Red Blood Cell Unit	10.2%	9.9%	8.9%	9.2%	10.2%
2 Red Blood Cell Units	11.0%	12.0%	11.3%	11.2%	11.5%
3 Red Blood Cell Units	3.9%	2.6%	1.9%	3.4%	3.8%
4+ Red Blood Cell Units	5.1%	6.0%	3.8%	5.5%	6.1%
1+ Fresh Frozen Plasma Units	7.5%	5.6%	4.7%	6.3%	7.3%
1+ Cryoprecipitate Units	2.0%	1.7%	1.9%	2.7%	3.0%
1+ Platelet Units	7.5%	5.6%	6.6%	7.7%	8.4%
Missing	0.0%	0.0%	0.0%	0.3%	0.2%

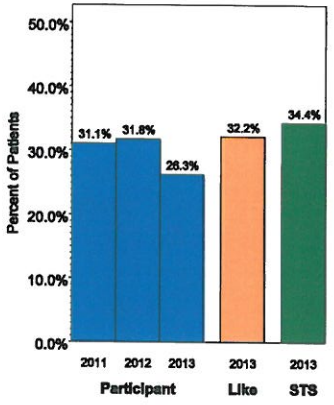
Skin Incision Duration (min)
Median + 25th/75th Percentiles



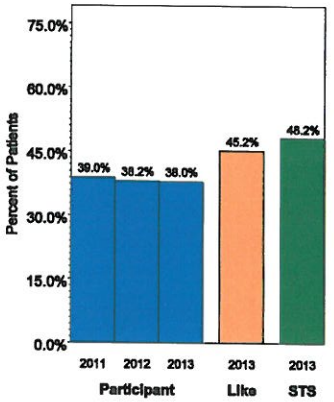
OR Duration (min)
Median + 25th/75th Percentiles



Postop Blood Products Used



Intraop/Postop Products Used



[1]All antibiotic measures are calculated among patients without exclusions (v2.73 only)
[2]First or second generation cephalosporin prescribed/given prophylactically
[3]Appropriate timing of prophylactic antibiotics
[4]Prophylactic antibiotics discontinued within 48 hours
[5]Includes one or more of the following: Aprotinin, Epsilon Amino-Caproic Acid, Desmopressin, or Tranexamic Acid

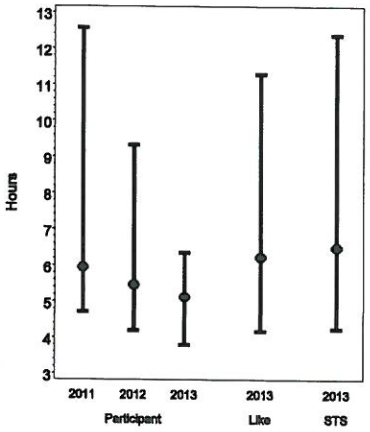
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

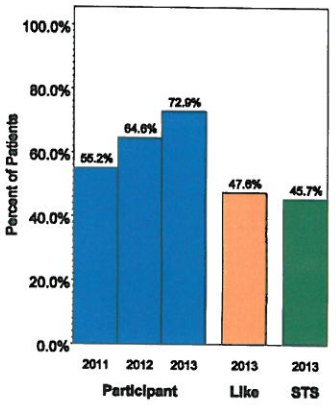
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Intraop/Postop Products Used	39.0%	38.2%	38.0%	45.2%	48.2%
Total Number of Blood Product Units					
1 Red Blood Cell Unit	9.4%	9.4%	10.3%	8.9%	9.5%
2 Red Blood Cell Units	13.8%	12.4%	9.9%	13.4%	13.5%
3 Red Blood Cell Units	5.5%	3.9%	2.3%	5.8%	6.2%
4+ Red Blood Cell Units	7.5%	8.6%	8.5%	11.8%	13.1%
1+ Fresh Frozen Plasma Units	11.0%	6.9%	4.7%	11.5%	13.9%
1+ Cryoprecipitate Units	5.5%	2.1%	1.9%	4.4%	4.9%
1+ Platelet Units	18.1%	15.5%	17.8%	18.6%	20.5%
Missing	0.0%	0.0%	0.0%	0.0%	0.1%
Ventilation					
Total Ventilation Hours					
Mean	37.1	28.6	17.6	17.1	18.9
Median	6.0	5.5	5.1	6.3	6.5
25th Percentile	4.7	4.2	3.8	4.2	4.3
75th Percentile	12.6	9.4	6.4	11.3	12.4
Initial Ventilation Hours					
Mean	25.4	15.9	10.0	12.6	13.9
Median	5.9	5.5	5.1	6.2	6.4
Initial Ventilation <6 hours[1]	55.2%	64.6%	72.9%	47.6%	45.7%
Extubated in OR	0.8%	3.0%	2.8%	2.7%	2.6%
Missing	0.0%	0.0%	0.0%	0.0%	0.2%
Reintubation	5.9%	5.6%	4.2%	3.3%	3.5%
Missing	0.0%	0.0%	0.0%	0.5%	0.4%
Additional Ventilation Hours[2]					
Mean	196.7	220.5	175.9	131.8	139.5
Median	120.8	68.8	59.5	66.0	70.0

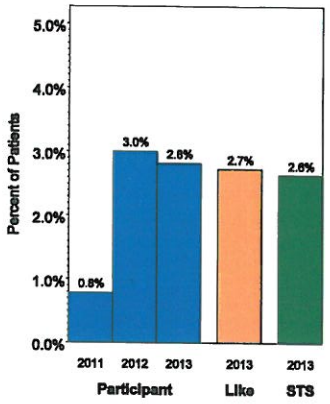
Total Ventilation Hours
Median + 25th/75th Percentiles



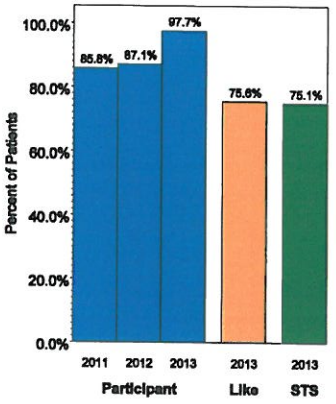
Initial Ventilation <6 Hrs



Extubated in OR



Total ICU >24 hours



[1]Excludes patients extubated in the OR
[2]Among patients reintubated

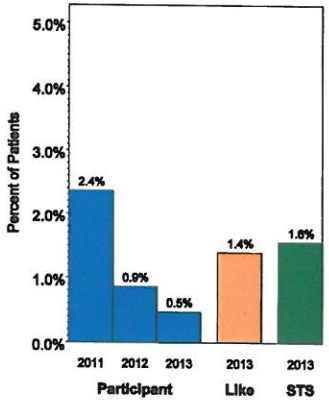
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

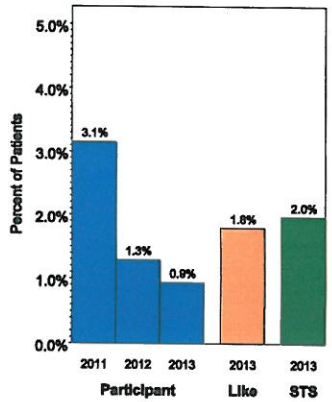
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
ICU Stay					
Total ICU Hours					
Mean	89.3	80.1	78.1	66.2	69.0
Median	48.9	50.3	51.3	46.0	46.7
25th Percentile	27.7	28.0	34.4	25.0	25.0
75th Percentile	73.7	94.0	75.5	72.6	74.4
Initial ICU Hours					
Mean	86.8	72.5	77.2	62.9	65.4
Median	48.0	50.3	51.3	45.3	46.0
Readmitted to ICU	3.1%	4.3%	1.4%	2.9%	2.8%
Additional ICU Hours[1]					
Mean	79.7	177.5	66.1	115.0	126.7
Median	60.8	122.0	64.0	65.5	68.8
Mortality Summary					
In-hospital Mortality	2.4%	0.9%	0.5%	1.4%	1.6%
Operative Mortality	3.1%	1.3%	0.9%	1.8%	2.0%
Mortality Risk-Adjustment[2]					
In-hospital Mortality					
Odds Ratio	0.99	0.74	0.71	0.96	1.00
Lower 95% Confidence Limit	0.55	0.38	0.34	0.84	-
Upper 95% Confidence Limit	1.80	1.43	1.49	1.10	-
O/E Ratio	1.00	0.41	0.28	0.90	1.00
Lower 95% Confidence Limit	0.42	0.07	0.01	0.83	-
Upper 95% Confidence Limit	2.03	1.41	1.51	0.97	-
Risk-adjusted Rate	1.6%	0.7%	0.4%	1.4%	1.6%
Operative Mortality					
Odds Ratio	1.07	0.77	0.78	1.02	1.00
Lower 95% Confidence Limit	0.62	0.42	0.42	0.90	-
Upper 95% Confidence Limit	1.84	1.42	1.46	1.14	-
O/E Ratio	1.11	0.50	0.45	0.91	1.00
Lower 95% Confidence Limit	0.53	0.13	0.08	0.85	-
Upper 95% Confidence Limit	2.04	1.39	1.55	0.98	-
Risk-adjusted Rate	2.2%	1.0%	0.9%	1.8%	2.0%

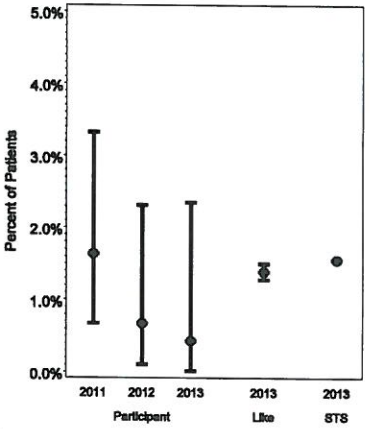
In-Hospital Mortality



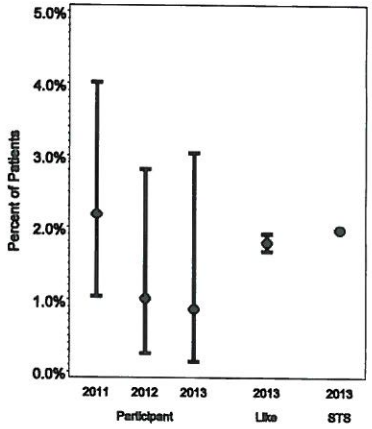
Operative Mortality



In-Hospital Mortality
Risk-adjusted rate + 95% CI



Operative Mortality
Risk-adjusted rate + 95% CI



[1]Among patients readmitted to the ICU
[2]Refer to the Report Overview for information on risk-adjustment methodology
Risk-adjustment is not performed on time periods of less than 6 months

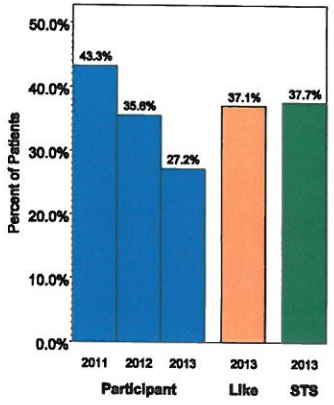
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

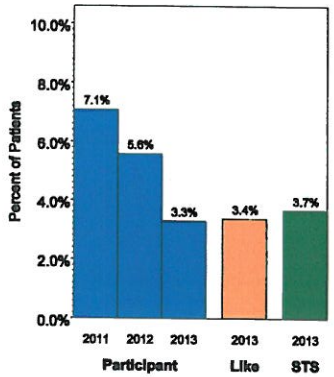
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Complications Summary					
Any Complications	43.3%	35.6%	27.2%	37.1%	37.7%
Any Major Complications / Operative Mortality	18.1%	17.6%	8.5%	11.8%	13.0%
Operative Complications					
Any Reoperation	7.1%	5.6%	3.3%	3.4%	3.7%
Any Reoperation (NQF Definition)[1]	2.8%	3.9%	2.3%	2.2%	2.3%
Reoperation for Bleeding	2.0%	2.1%	1.9%	1.8%	1.8%
Reoperation for Valvular Dysfunction	0.0%	0.0%	0.0%	0.0%	0.0%
Reoperation for Graft Occlusion	0.0%	0.4%	0.0%	0.1%	0.2%
Reoperation for Other Cardiac	0.8%	1.3%	0.9%	0.3%	0.4%
Reoperation for Other Non-Cardiac	4.7%	2.1%	0.9%	1.3%	1.5%
Perioperative MI[2]	0.4%	0.0%	0.0%	0.0%	0.0%
Infection Complications					
Any Infection	3.9%	2.1%	1.4%	1.5%	1.8%
Deep Sternal Infection/Mediastinitis	0.4%	**0.0%**	**0.0%**	0.2%	0.3%
Septicemia/Sepsis	3.5%	0.9%	0.9%	0.7%	0.8%
Leg Infection[3, 4]	0.0%	-	-	-	-
Arm Infection[3, 4]	0.0%	-	-	-	-
Conduit Harvest or Cannulation Site[3, 4]	0.0%	0.0%	0.5%	0.3%	0.3%
Neurological Complications					
Any Neurological	5.5%	4.7%	2.8%	3.1%	3.1%
Coma/Encephalopathy	4.7%	3.9%	1.9%	1.9%	1.9%
Permanent Stroke	1.2%	1.3%	1.9%	1.2%	1.2%
Transient Ischemic Attack	0.4%	0.4%	0.0%	0.2%	0.2%
RIND[2]	0.0%	0.0%	0.0%	0.0%	0.0%
Paralysis	0.0%	1.3%	0.0%	0.1%	0.2%
Pulmonary Complications					
Any Pulmonary	16.1%	13.7%	8.5%	11.5%	12.6%
Prolonged Ventilation	15.0%	12.0%	6.1%	7.9%	8.8%
Pneumonia	6.3%	4.3%	3.3%	2.5%	2.8%
Pulmonary Embolism	0.0%	0.0%	0.0%	0.0%	0.0%
Pleural Effusion Requiring Drainage[5]	4.2%	3.9%	2.3%	3.5%	3.4%

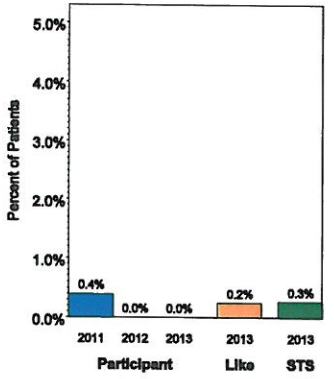
Any Complication



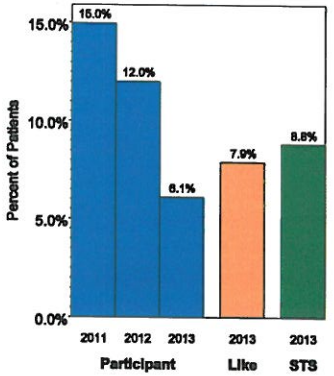
Any Reoperation
Observed rate



Deep Sternal Infx/Mediastinitis
Observed rate



Prolonged Ventilation
Observed rate



[1]Includes reoperations for bleeding/tamponade, valvular dysfunction, graft occlusion, and other cardiac problems.
[2]Variable eliminated for v2.73 data
[3]Excludes patients with zero vein grafts
[4]For v2.73 data, conduit harvest or cannulation site replaces the leg/arm infection categories
[5]New variable for v2.73 data

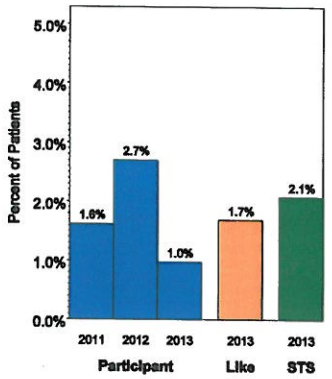
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

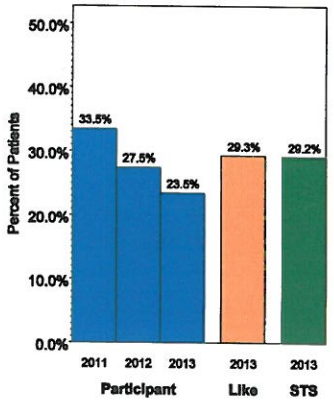
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Renal Complications					
Renal Failure[1]	1.6%	2.7%	1.0%	1.7%	2.1%
Vascular Complications					
Any Vascular	0.0%	0.4%	0.0%	0.3%	0.3%
Acute Limb Ischemia	0.0%	0.0%	0.0%	0.2%	0.3%
Other Complications					
Any Other	33.5%	27.5%	23.5%	29.3%	29.2%
New Onset Atrial Fibrillation[2]	15.5%	15.6%	13.7%	23.4%	23.0%
Recent Recurrent Atrial Fibrillation[3]	0.0%	0.0%	7.7%	18.0%	17.7%
Heart Block[4]	0.0%	-	-	-	-
Cardiac Arrest	3.9%	4.7%	1.4%	1.6%	1.7%
Anticoagulant Complication	1.6%	0.4%	1.4%	0.5%	0.6%
Tamponade	0.4%	0.0%	0.0%	0.0%	0.0%
Gastro-Intestinal Complication	3.9%	3.4%	3.8%	2.0%	2.0%
Multi-System Failure	0.0%	0.0%	0.5%	0.5%	0.6%
Complications Risk-Adjustment[5]					
Major Complications or Op. Mortality					
Odds Ratio	0.93	1.11	0.61	0.87	1.00
Lower 95% Confidence Limit	0.67	0.79	0.41	0.80	-
Upper 95% Confidence Limit	1.29	1.56	0.92	0.94	-
O/E Ratio	0.93	1.07	0.57	0.91	1.00
Lower 95% Confidence Limit	0.72	0.81	0.35	0.89	-
Upper 95% Confidence Limit	1.17	1.38	0.85	0.93	-
Risk-adjusted Rate	14.0%	14.8%	7.4%	11.9%	13.0%
Any Reoperation					
Odds Ratio	1.29	1.24	0.91	0.85	1.00
Lower 95% Confidence Limit	0.84	0.76	0.52	0.77	-
Upper 95% Confidence Limit	1.98	2.02	1.58	0.94	-
O/E Ratio	1.35	1.26	0.80	0.93	1.00
Lower 95% Confidence Limit	0.84	0.71	0.35	0.88	-
Upper 95% Confidence Limit	2.06	2.08	1.60	0.97	-
Risk-adjusted Rate	5.6%	4.7%	2.9%	3.4%	3.7%

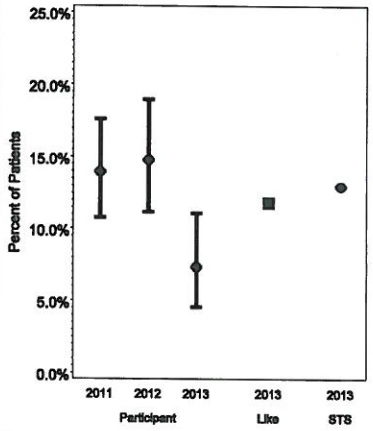
Renal Failure Complication
Observed rate



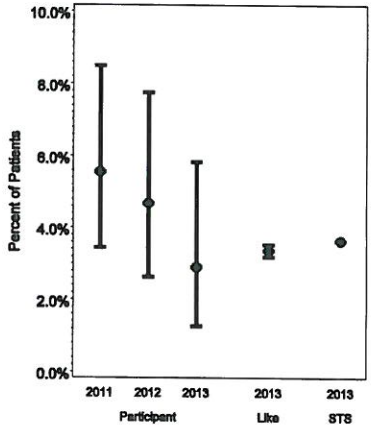
Any Other Complications



Major Complication or Mortality
Risk-adjusted rate + 95% CI



Any Reoperation
Risk-adjusted rate + 95% CI



[1]Excludes patients with preoperative dialysis or last creatinine > 4
[2]New Onset AFib is only among patients with no history of arrhythmias
[3]Recent Recurrent AFib is among patients with history of recent afib (v2.73 data only)
[4]Variable eliminated for v2.73 data
[5]Refer to the Report Overview for information on risk-adjustment methodology
Risk-adjustment is not performed on time periods of less than 6 months

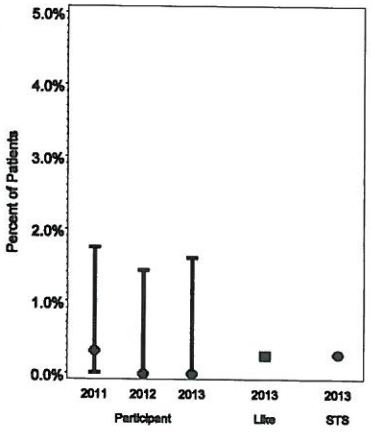
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

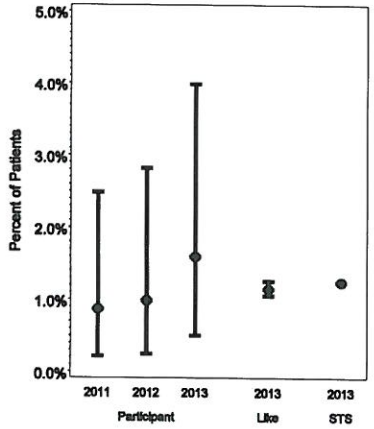
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Deep Sternal Infection/Mediastinitis					
Odds Ratio	1.08	0.74	0.81	0.82	1.00
Lower 95% Confidence Limit	0.32	0.20	0.24	0.63	-
Upper 95% Confidence Limit	3.61	2.74	2.73	1.05	-
O/E Ratio	0.98	0.00	0.00	0.92	1.00
Lower 95% Confidence Limit	0.05	0.00	0.00	0.77	-
Upper 95% Confidence Limit	5.36	4.43	6.00	1.13	-
Risk-adjusted Rate	0.3%	0.0%	0.0%	0.2%	0.3%
Permanent Stroke					
Odds Ratio	0.90	0.95	1.07	0.87	1.00
Lower 95% Confidence Limit	0.50	0.59	0.60	0.77	-
Upper 95% Confidence Limit	1.61	1.51	1.88	0.98	-
O/E Ratio	0.71	0.76	1.28	0.92	1.00
Lower 95% Confidence Limit	0.18	0.20	0.41	0.85	-
Upper 95% Confidence Limit	2.02	2.17	3.20	1.01	-
Risk-adjusted Rate	0.9%	1.0%	1.6%	1.2%	1.2%
Renal Failure					
Odds Ratio	0.54	0.87	0.59	0.85	1.00
Lower 95% Confidence Limit	0.28	0.44	0.26	0.74	-
Upper 95% Confidence Limit	1.03	1.72	1.33	0.99	-
O/E Ratio	0.38	0.84	0.36	0.80	0.99
Lower 95% Confidence Limit	0.12	0.35	0.06	0.76	-
Upper 95% Confidence Limit	0.89	1.74	1.21	0.87	-
Risk-adjusted Rate	1.2%	2.0%	0.8%	1.7%	2.1%
Prolonged Ventilation					
Odds Ratio	1.11	1.10	0.67	0.83	1.00
Lower 95% Confidence Limit	0.77	0.73	0.41	0.74	-
Upper 95% Confidence Limit	1.60	1.66	1.09	0.93	-
O/E Ratio	1.05	1.04	0.60	0.90	1.00
Lower 95% Confidence Limit	0.78	0.73	0.34	0.87	-
Upper 95% Confidence Limit	1.35	1.41	0.99	0.93	-
Risk-adjusted Rate	11.0%	10.0%	5.3%	8.0%	8.8%

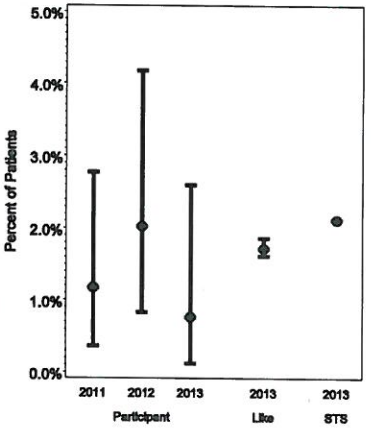
Deep Sternal Infx/Mediastinitis
Risk-adjusted rate + 95% CI



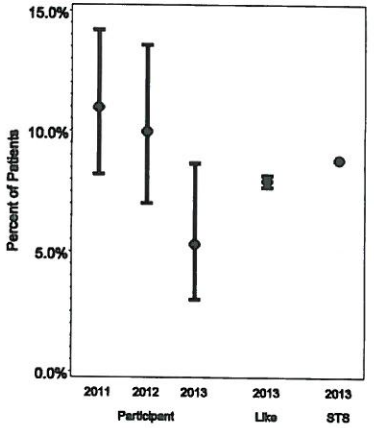
Permanent Stroke
Risk-adjusted rate + 95% CI



Renal Failure Complication
Risk-adjusted rate + 95% CI



Prolonged Ventilation
Risk-adjusted rate + 95% CI



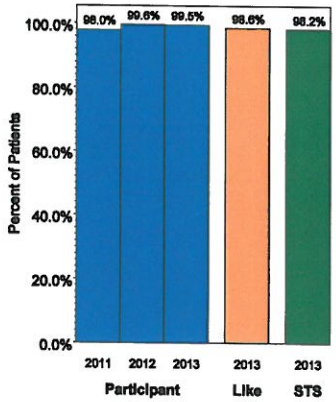
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

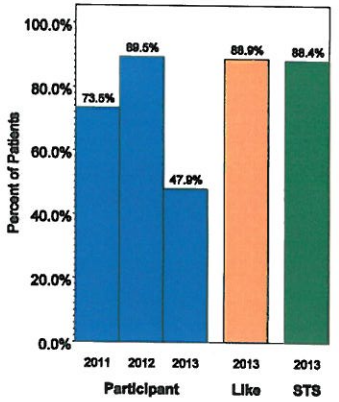
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Discharge Location[1]					
Home	65.3%	63.6%	63.7%	81.2%	80.2%
Extended Care/TCU	33.1%	34.6%	34.0%	14.9%	15.6%
Other Hospital	1.6%	1.3%	1.4%	0.6%	0.7%
Nursing Home	0.0%	0.4%	0.0%	2.8%	2.9%
Hospice	0.0%	0.0%	0.0%	0.2%	0.2%
Other	0.0%	0.0%	0.9%	0.2%	0.3%
Missing	0.0%	0.0%	0.0%	0.0%	0.1%
Discharge Medications[1]					
Aspirin	97.2%	97.0%	97.2%	97.1%	96.8%
Among Eligible Cases	98.0%	99.6%	99.5%	98.6%	98.2%
Contraindicated / Not Indicated	0.8%	2.6%	2.4%	1.5%	1.4%
Missing	0.0%	0.0%	0.0%	0.0%	0.2%
ACE inhibitors	56.0%	51.5%	43.9%	44.6%	43.6%
Among Eligible Cases	73.5%	89.5%	47.9%	88.9%	88.4%
Contraindicated / Not Indicated	23.8%	42.4%	8.5%	49.9%	50.7%
Missing	0.0%	6.1%	47.6%	5.5%	5.7%
Beta blockers	96.0%	93.5%	94.3%	95.4%	94.8%
Among Eligible Cases	99.2%	100.0%	99.5%	99.0%	98.4%
Contraindicated / Not Indicated	3.2%	6.5%	5.2%	3.6%	3.7%
Missing	0.0%	0.0%	0.0%	0.0%	0.2%
Lipid-Lowering agents	95.2%	97.0%	96.7%	96.0%	95.2%
Among Eligible Cases	98.3%	100.0%	98.6%	98.3%	97.6%
Contraindicated / Not Indicated	3.2%	3.0%	1.9%	2.4%	2.4%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
ADP Inhibitors	17.3%	13.9%	45.8%	31.7%	33.8%
Among Eligible Cases	17.3%	13.9%	45.8%	31.7%	33.8%
Contraindicated / Not Indicated[2]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%

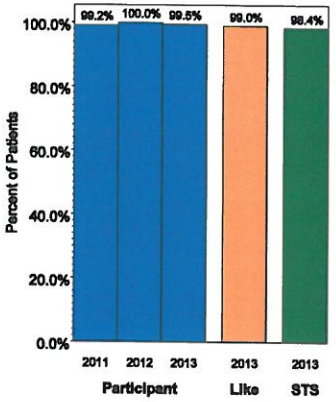
Discharge Aspirin



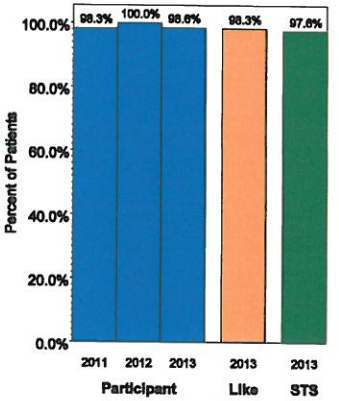
Discharge ACE Inhibitors



Discharge Beta Blocker



Discharge Lipid-Lowering Agent



[1]Excludes in-hospital mortalities

[2]For v2.73 data, the Contraindicated/Not Indicated option was deleted

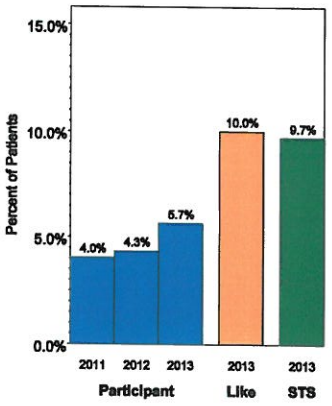
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

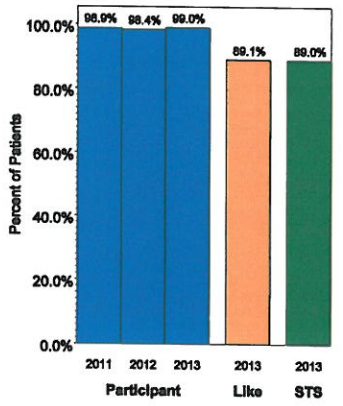
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Antiarrhythmics	76.2%	81.8%	81.6%	33.5%	32.6%
Among Eligible Cases	76.2%	81.8%	81.6%	33.5%	32.6%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Coumadin	4.0%	4.3%	5.7%	10.0%	9.7%
Among Eligible Cases	4.0%	4.3%	5.7%	10.0%	9.7%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Discharge Referrals/Counseling[2]					
Cardiac Rehabilitation Referral	98.9%	98.4%	99.0%	89.1%	89.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.3%
Smoking Cessation Counseling	90.9%	87.5%	98.1%	92.7%	91.3%
Missing	0.0%	0.0%	0.0%	0.3%	0.5%
Readmission and Reason[3]					
Readmitted within 30 Days	12.9%	8.2%	3.3%	9.4%	9.5%
Anticoagulation Complication					
Valvular	0.0%	0.0%	0.0%	0.0%	0.0%
Pharmacological	0.0%	0.0%	0.0%	0.1%	0.1%
Arrhythmias/Heart Block	0.4%	0.4%	0.5%	0.8%	0.8%
Congestive Heart Failure	0.8%	1.3%	0.0%	1.1%	1.0%
MI and/or Recurrent Angina	0.4%	1.3%	0.5%	0.5%	0.5%
Pericardial Effusion / Tamponade	0.0%	0.0%	0.5%	0.2%	0.2%
Pneumonia or other					
Respiratory Complication	1.2%	0.9%	0.5%	1.5%	1.5%
Coronary Artery Dysfunction	0.8%	0.0%	0.0%	0.0%	0.0%
Valve Dysfunction	0.0%	0.0%	0.0%	0.0%	0.0%
Infection - Deep Sternum	0.4%	0.0%	0.0%	0.3%	0.4%
Infection - Conduit Harvest Site	0.8%	0.0%	0.0%	0.3%	0.3%
Renal Failure	0.4%	0.0%	0.0%	0.1%	0.1%
TIA / Permanent CVA	0.0%	0.4%	0.0%	0.2%	0.2%
Acute Vascular Complication	0.4%	0.4%	0.0%	0.0%	0.0%
Subacute Endocarditis	0.0%	0.0%	-	-	-
VAD Complication	-	0.0%	0.0%	0.0%	0.0%
Other	7.3%	3.5%	1.4%	3.6%	3.8%
Missing	0.0%	0.0%	0.0%	2.4%	3.1%

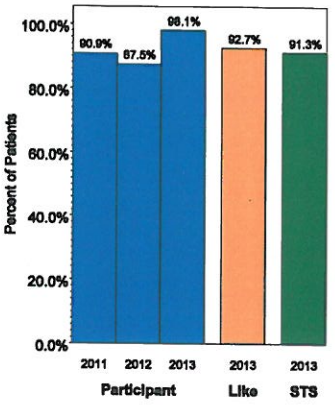
Discharge Coumadin



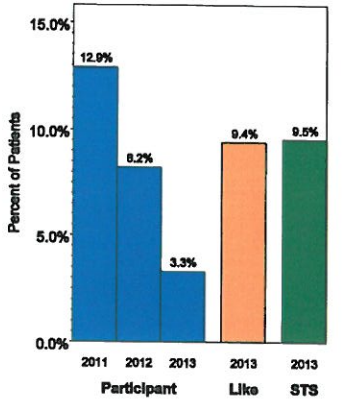
Cardiac Rehabilitation Referral



Smoking Cessation Counseling



30-Day Readmission



[1]For v2.73 data, the Contraindicated/Not Indicated option was deleted
[2]Excludes in-hospital mortalities and Not Applicable Records
[3]Excludes in-hospital mortalities

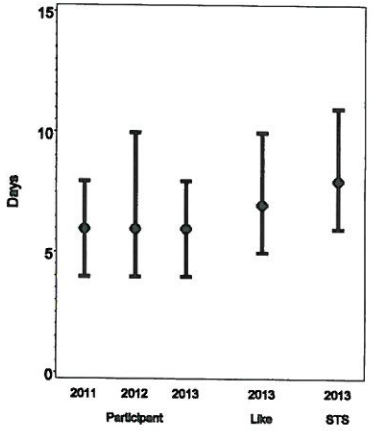
Isolated CAB Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

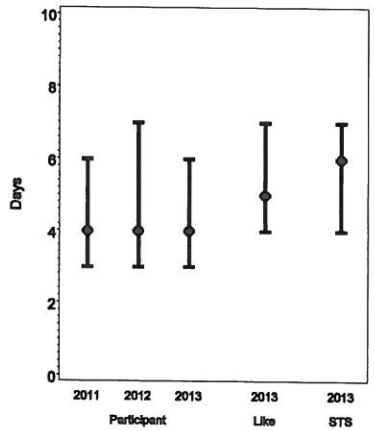
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Length of Stay Summary					
Total Length of Stay (days)					
Mean	8.5	8.1	7.6	8.9	9.1
Median	6.0	6.0	6.0	7.0	8.0
25th Percentile	4.0	4.0	4.0	5.0	6.0
75th Percentile	8.0	10.0	8.0	10.0	11.0
Post-Procedure Length of Stay (days)					
Mean	6.7	6.3	5.7	6.6	6.8
Median	4.0	4.0	4.0	5.0	6.0
25th Percentile	3.0	3.0	3.0	4.0	4.0
75th Percentile	6.0	7.0	6.0	7.0	7.0
PLOS <6 days	69.3%	64.8%	68.1%	51.6%	48.5%
PLOS >14 days	5.5%	7.3%	4.2%	4.4%	4.9%
Length of Stay Risk-Adjustment[1]					
Short stay: PLOS <6 days					
Odds Ratio	3.75	2.88	3.04	1.35	1.00
Lower 95% Confidence Limit	2.80	2.14	2.24	1.17	-
Upper 95% Confidence Limit	5.02	3.86	4.11	1.55	-
O/E Ratio	1.62	1.48	1.56	1.06	1.00
Lower 95% Confidence Limit	1.49	1.34	1.42	1.05	-
Upper 95% Confidence Limit	1.73	1.60	1.69	1.07	-
Risk-adjusted Rate	78.7%	70.7%	75.9%	51.4%	48.5%
Long stay: PLOS >14 days					
Odds Ratio	0.79	1.10	0.83	0.80	1.00
Lower 95% Confidence Limit	0.49	0.69	0.48	0.72	-
Upper 95% Confidence Limit	1.27	1.77	1.45	0.90	-
O/E Ratio	0.74	1.07	0.75	0.90	1.00
Lower 95% Confidence Limit	0.44	0.66	0.37	0.87	-
Upper 95% Confidence Limit	1.18	1.62	1.36	0.94	-
Risk-adjusted Rate	3.8%	5.6%	3.7%	4.4%	4.9%

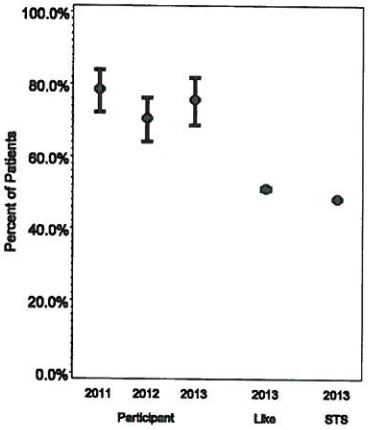
Total Length of Stay
Median + 25th/75th Percentiles



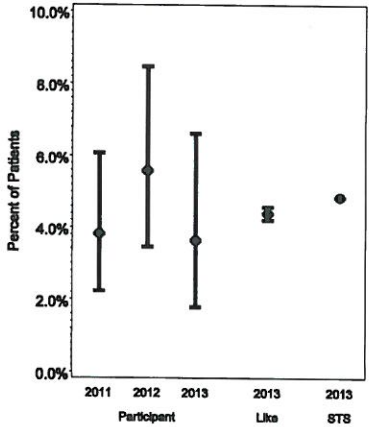
Postop Length of Stay
Median + 25th/75th Percentiles



PLOS < 6 days
Risk-adjusted rate + 95% CI



PLOS > 14 days
Risk-adjusted rate + 95% CI



[1]Refer to the Report Overview for information on risk-adjustment methodology
Risk-adjustment is not performed on time periods of less than 6 months

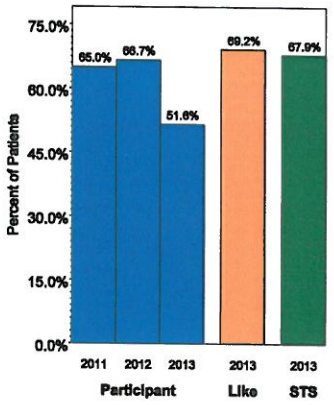
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

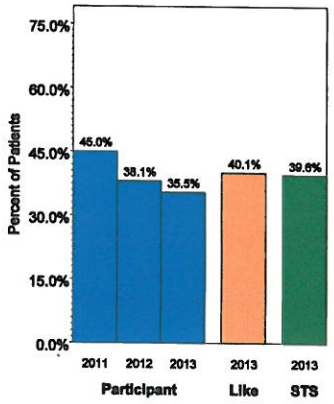
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Number of Cases	20	42	31	9,773	30,241
Demographics					
Age (years)					
Mean	67.7	66.1	67.2	68.8	68.6
Median	69.5	68.0	65.0	70.0	70.0
25th Percentile	60.5	58.0	59.0	62.0	61.0
75th Percentile	78.0	74.0	78.0	78.0	78.0
Age >= 65 years old	65.0%	66.7%	51.6%	69.2%	67.9%
Gender, Female	45.0%	38.1%	35.5%	40.1%	39.6%
Missing	0.0%	0.0%	0.0%	0.0%	0.0%
Race[1]					
Caucasian	75.0%	69.0%	64.5%	91.2%	89.6%
Black	15.0%	28.6%	22.6%	4.2%	5.0%
Asian	0.0%	0.0%	0.0%	0.8%	1.2%
Native American	0.0%	0.0%	0.0%	0.7%	0.6%
Native Hawaiian/Pacific Islander	0.0%	0.0%	0.0%	0.2%	0.3%
Other	10.0%	2.4%	0.0%	2.1%	2.9%
Multiple Races	0.0%	0.0%	0.0%	0.6%	0.7%
Missing	0.0%	0.0%	12.9%	1.6%	1.2%
Hispanic or Latino Ethnicity	10.0%	4.8%	3.2%	5.8%	5.9%
Missing	0.0%	0.0%	0.0%	0.1%	0.4%
Body Mass Index[2]					
Underweight (BMI < 18.5)	0.0%	0.0%	0.0%	0.9%	1.0%
Normal (BMI 18.5 - 24.9)	20.0%	16.7%	16.1%	20.4%	21.0%
Overweight (BMI 25.0 - 29.9)	55.0%	45.2%	38.7%	34.3%	34.5%
Obese I (BMI 30.0 - 34.9)	20.0%	16.7%	19.4%	23.3%	23.5%
Obese II (BMI 35.0 - 39.9)	5.0%	14.3%	19.4%	12.2%	11.7%
Morbid Obesity (BMI 40.0+)	0.0%	7.1%	6.5%	8.8%	8.0%
Missing Height	0.0%	0.0%	0.0%	0.0%	0.1%
Missing Weight	0.0%	0.0%	0.0%	0.0%	0.1%

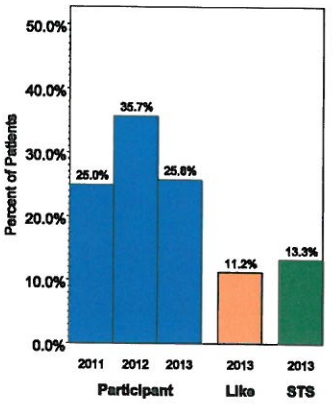
Age >= 65



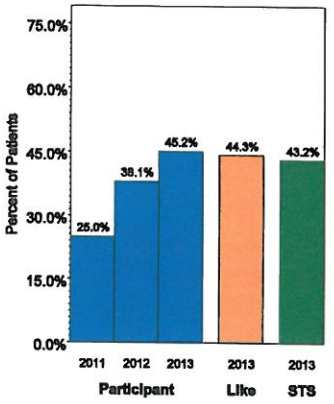
Gender, Female



Race, Non-Caucasian



Obesity (BMI 30+)



[1]Data presented in the report represent the individual response rates for each race category shown; summing the individual non-caucasian categories will not result in the same rates as shown in the graph since non-caucasian, as defined for the graph, does not include races or ethnicities reported in combination with caucasian

[2]BMI = Weight(kg) / Height(m)^2

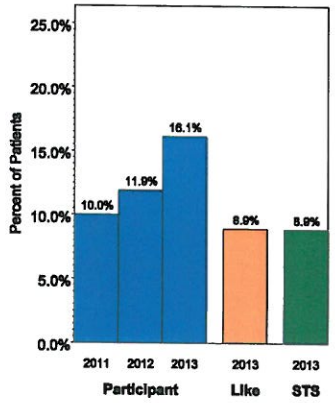
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

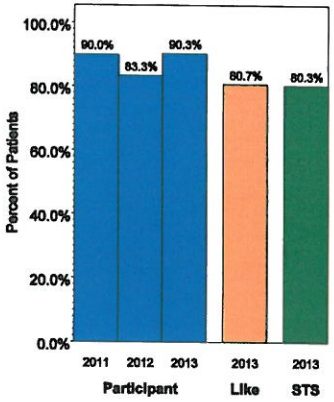
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Comorbidities					
Diabetes Mellitus	30.0%	35.7%	32.3%	32.3%	31.3%
Diet Control	0.0%	7.1%	3.2%	3.3%	2.9%
Oral Control	20.0%	16.7%	12.9%	17.1%	16.8%
Insulin Control	10.0%	11.9%	16.1%	8.9%	8.9%
Other Control	0.0%	0.0%	0.0%	0.2%	0.1%
Missing Control	0.0%	0.0%	0.0%	0.1%	0.1%
Missing	0.0%	0.0%	0.0%	0.3%	0.2%
Hypertension	90.0%	83.3%	90.3%	80.7%	80.3%
Missing	0.0%	0.0%	0.0%	0.1%	0.1%
Current/Recent Cigarette Smoker	30.0%	42.9%	12.9%	20.0%	20.1%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Chronic Lung Disease					
Mild	20.0%	21.4%	19.4%	14.9%	14.4%
Moderate	10.0%	7.1%	19.4%	6.2%	5.9%
Severe	10.0%	14.3%	12.9%	4.2%	4.1%
Missing	0.0%	0.0%	0.0%	0.3%	0.3%
Congestive Heart Failure	30.0%	31.0%	16.1%	39.3%	41.9%
CHF / NYHA Class I[1]	0.0%	0.0%	0.0%	2.4%	2.4%
CHF / NYHA Class II	0.0%	4.8%	6.5%	10.9%	13.3%
CHF / NYHA Class III	20.0%	14.3%	9.7%	18.9%	18.9%
CHF / NYHA Class IV	10.0%	11.9%	0.0%	6.6%	6.4%
CHF / Missing Class	0.0%	0.0%	0.0%	1.5%	2.2%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Peripheral Arterial Disease	20.0%	9.5%	6.5%	9.6%	9.7%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Cerebrovascular Disease	5.0%	19.0%	3.2%	13.4%	13.6%
Missing	0.0%	0.0%	0.0%	0.1%	0.1%
Coma/Nonresponsive State	0.0%	0.0%	0.0%	0.1%	0.2%
Missing	0.0%	0.0%	0.0%	0.6%	0.7%
CVD TIA	5.0%	4.8%	3.2%	4.7%	5.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%

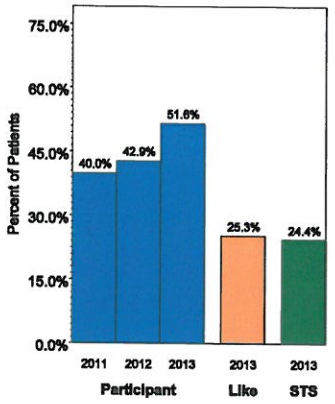
Diabetes, Insulin Dependent



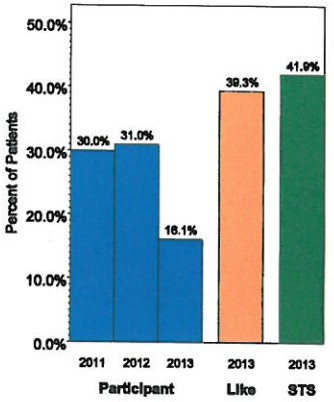
Hypertension



Chronic Lung Disease, Any



Congestive Heart Failure



[1]NYHA Class is only collected for patients with CHF
% represents proportion of cases that had both CHF and the indicated NYHA class

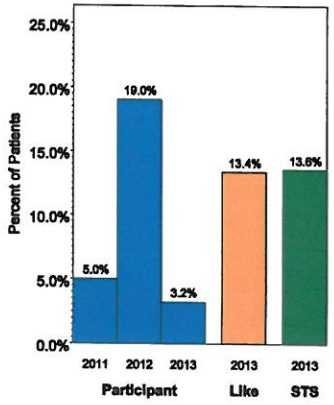
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

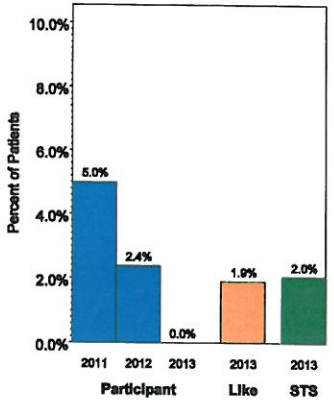
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Carotid Stenosis[1]	0.0%	0.0%	0.0%	1.3%	1.3%
Missing	0.0%	0.0%	0.0%	0.7%	0.6%
CVD Prior Carotid Surgery	0.0%	2.4%	0.0%	2.9%	2.9%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Cerebrovascular Accident	0.0%	7.1%	3.2%	6.9%	6.9%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Renal Failure, Dialysis-Dependent	5.0%	2.4%	0.0%	1.9%	2.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Last Creatinine Preop					
Mean	1.7	1.5	1.2	1.1	1.1
Median	1.1	1.1	1.1	1.0	1.0
25th Percentile	0.9	0.9	0.9	0.8	0.8
75th Percentile	1.4	1.4	1.2	1.2	1.2
Missing	0.0%	0.0%	0.0%	0.5%	0.4%
Value > 4.0 mg/dL	10.0%	7.1%	0.0%	1.2%	1.5%
Immunosuppressive Treatment	10.0%	0.0%	3.2%	3.3%	3.7%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Infectious Endocarditis	5.0%	2.4%	0.0%	5.1%	5.5%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Previous Interventions					
Previous Cardiac Surgery[2]	10.0%	2.4%	12.9%	15.5%	16.3%
First reoperation	10.0%	2.4%	12.9%	14.7%	15.3%
Previous CAB	0.0%	2.4%	9.7%	8.2%	8.2%
Previous Valve	10.0%	0.0%	3.2%	6.5%	7.4%
Previous AICD	0.0%	0.0%	0.0%	1.3%	1.3%
Previous Pacemaker	0.0%	0.0%	3.2%	4.5%	4.7%

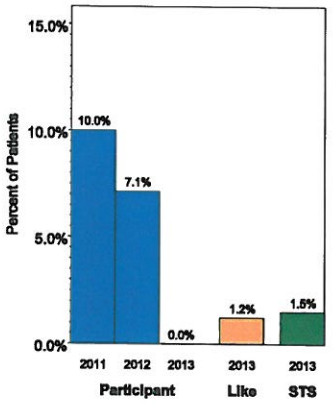
Cerebrovascular Disease



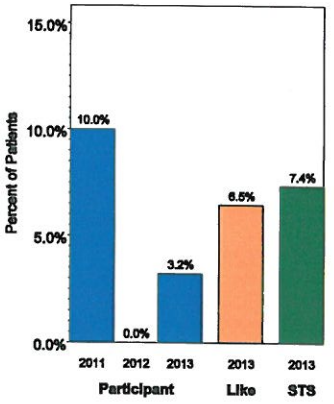
Dialysis



Last Creatinine Preop > 4.0



Previous Valve



[1]Defined as occlusion of either carotid artery >75% for v2.61 and >79% for v2.73
[2]Previous cardiac surgery reflects any prior CAB, valve, or other cardiac surgery

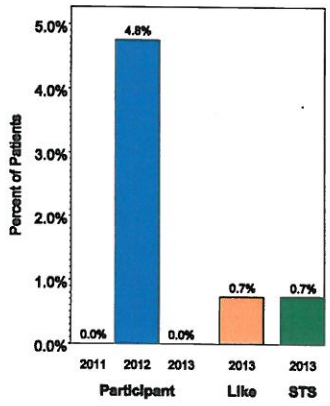
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

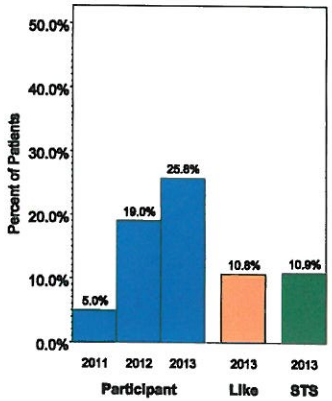
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Status					
Surgery Status					
Elective	50.0%	66.7%	61.3%	79.8%	79.3%
Urgent	50.0%	28.6%	38.7%	19.4%	19.9%
Emergent	0.0%	4.8%	0.0%	0.7%	0.7%
Emergent Salvage	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.0%	0.1%
MI	5.0%	19.0%	25.8%	10.8%	10.9%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Cardiogenic Shock	0.0%	4.8%	0.0%	0.7%	0.6%
Missing	0.0%	0.0%	0.0%	0.1%	0.1%
Hemodynamics and Catheterization					
Ejection Fraction					
Mean	56.4	51.7	55.9	57.1	56.9
Median	58.0	55.0	59.0	60.0	60.0
25th Percentile	53.5	47.0	55.0	54.0	54.0
75th Percentile	60.0	60.0	60.0	65.0	65.0
EF missing or not measured	0.0%	2.4%	0.0%	3.3%	3.6%
EF <40%[1]	5.0%	12.2%	9.7%	8.0%	8.4%
Pulmonary Hypertension[2]	37.5%	47.6%	45.5%	50.7%	51.4%
PA mean/systolic pressure missing or not measured	60.0%	50.0%	29.0%	37.4%	41.7%
Aortic Stenosis	90.0%	85.7%	90.3%	87.6%	86.8%
N/A[3]	0.0%	-	-	-	-
Missing	0.0%	0.0%	0.0%	0.2%	0.4%
Aortic Insufficiency					
Trivial	15.0%	28.6%	22.6%	15.9%	15.3%
Mild	20.0%	19.0%	29.0%	24.6%	25.1%
Moderate	25.0%	4.8%	12.9%	16.1%	15.9%
Severe	10.0%	14.3%	25.8%	16.4%	16.6%
N/A[3]	8.3%	-	-	-	-
Missing	0.0%	0.0%	0.0%	1.3%	1.5%

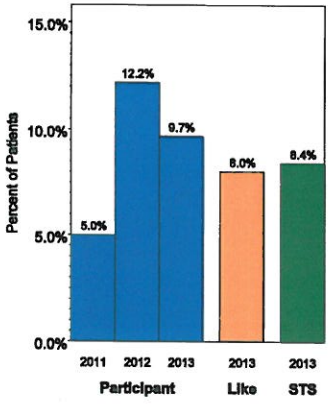
Emergent or Salvage Status



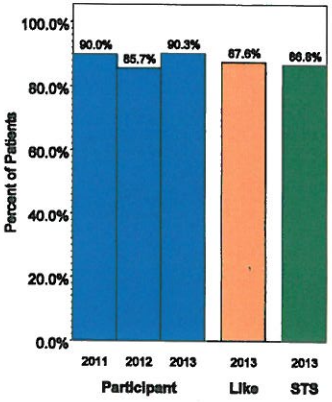
Prior MI



Ejection Fraction <40%



Aortic Stenosis



[1]Among patients with measured EF
[2]PA mean pressure > 30mmHg (v2.61) or PA systolic pressure > 35mmHg (v2.73)
[3]For v2.73 data, the N/A option was deleted

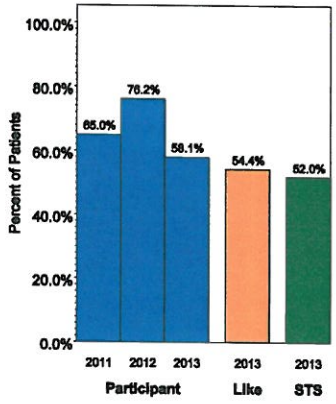
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

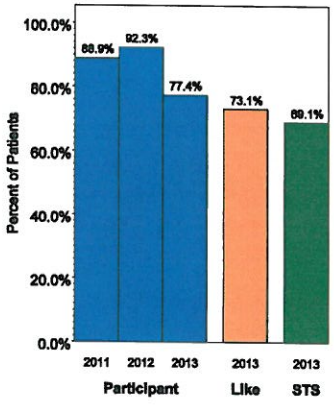
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Preoperative Medications					
Aspirin	65.0%	76.2%	58.1%	54.4%	52.0%
Among Eligible Cases	65.0%	76.2%	58.1%	54.4%	52.0%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.4%
Inotropics	0.0%	4.8%	0.0%	0.9%	1.2%
Among Eligible Cases	0.0%	4.8%	0.0%	0.9%	1.2%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.4%	0.5%
Beta Blockers	80.0%	85.7%	77.4%	68.6%	64.0%
Among Eligible Cases	88.9%	92.3%	77.4%	73.1%	69.1%
Contraindicated / Not Indicated	10.0%	7.1%	0.0%	6.0%	7.2%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Steroids	5.0%	2.4%	0.0%	2.8%	3.2%
Among Eligible Cases	5.0%	2.4%	0.0%	2.8%	3.2%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.4%	0.6%
Nitrates IV	0.0%	2.4%	0.0%	0.4%	0.5%
Among Eligible Cases	0.0%	2.4%	0.0%	0.4%	0.5%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.4%	0.6%
ACE Inhibitors	25.0%	52.4%	25.8%	37.2%	35.6%
Among Eligible Cases	25.0%	52.4%	25.8%	37.2%	35.6%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.2%	0.3%
Anticoagulants	15.0%	7.1%	22.6%	11.5%	12.4%
Among Eligible Cases	15.0%	7.1%	22.6%	11.5%	12.4%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.3%
Coumadin	0.0%	0.0%	0.0%	1.4%	1.7%
Among Eligible Cases	0.0%	0.0%	0.0%	1.4%	1.7%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%

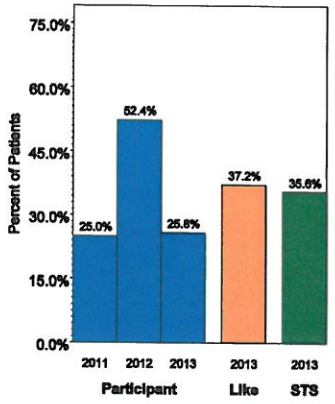
Preoperative Aspirin



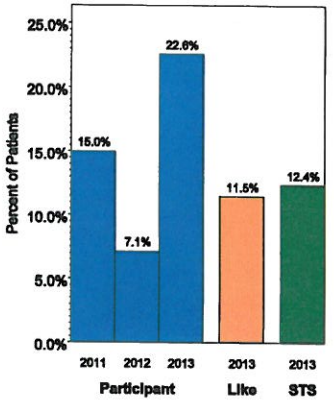
Preoperative Beta Blocker



Preoperative ACE Inhibitors



Preoperative Anticoagulants



[1]For v2.73 data, the Contraindicated/Not Indicated option was deleted

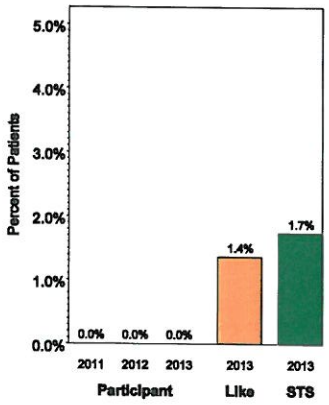
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

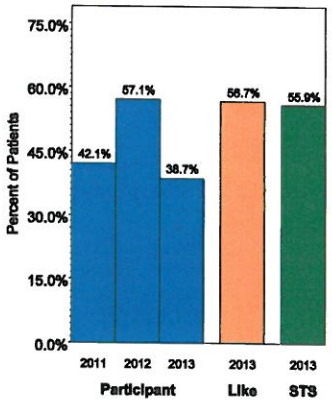
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Lipid-Lowering agents	40.0%	57.1%	38.7%	56.7%	55.9%
Among Eligible Cases	42.1%	57.1%	38.7%	56.7%	55.9%
Contraindicated / Not Indicated[1]	5.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.4%
Glycoprotein IIb/IIIa Inhibitor	0.0%	0.0%	0.0%	0.1%	0.1%
Among Eligible Cases	0.0%	0.0%	0.0%	0.1%	0.1%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.3%
ADP Inhibitors within 5 Days	0.0%	9.5%	0.0%	1.6%	2.0%
Among Eligible Cases	0.0%	9.5%	0.0%	1.6%	2.0%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.3%
ADP Inhibitor Discontinuation[2]					
< 1 Day	-	25.0%	-	15.1%	16.6%
1 Day	-	0.0%	-	18.2%	21.0%
2 Days	-	0.0%	-	17.0%	13.0%
3 Days	-	0.0%	-	15.1%	11.9%
4 Days	-	50.0%	-	16.4%	14.8%
5 Days	-	25.0%	-	17.6%	18.4%
Missing	-	0.0%	-	0.6%	4.4%
Antiplatelets within 5 Days	5.0%	11.9%	0.0%	1.7%	2.7%
Among Eligible Cases	5.0%	11.9%	0.0%	1.7%	2.7%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.1%	0.3%
Operative Information					
Blood Products Used	35.0%	11.9%	32.3%	36.8%	38.9%
Number of Blood Product Units Used					
1 Red Blood Cell Unit	20.0%	2.4%	0.0%	7.5%	8.2%
2 Red Blood Cell Units	5.0%	2.4%	12.9%	11.6%	11.4%
3 Red Blood Cell Units	0.0%	2.4%	0.0%	3.7%	4.2%
4+ Red Blood Cell Units	5.0%	0.0%	9.7%	4.9%	5.3%
1+ Fresh Frozen Plasma Units	10.0%	7.1%	3.2%	13.3%	14.6%
1+ Cryoprecipitate Units	5.0%	4.8%	3.2%	4.8%	5.5%
1+ Platelet Units	15.0%	7.1%	22.6%	19.5%	21.0%
Missing	0.0%	0.0%	0.0%	0.2%	0.1%

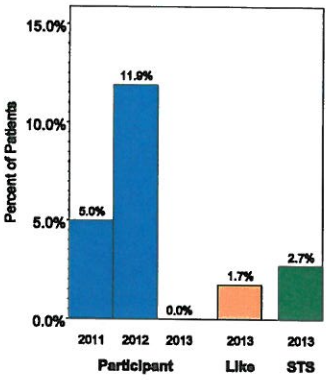
Preoperative Coumadin



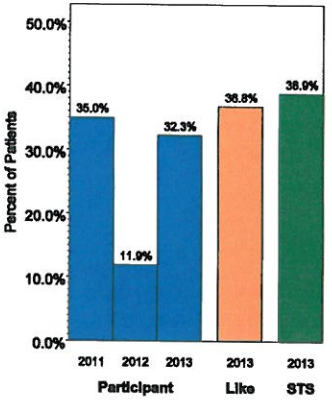
Preoperative Lipid-Lowering Agent



Preoperative Antiplatelets within 5 Days



Intraop Blood Products Used



[1]For v2.73 data, the Contraindicated/Not Indicated option was deleted
[2]Excludes patients not on ADP Inhibitors within 5 Days

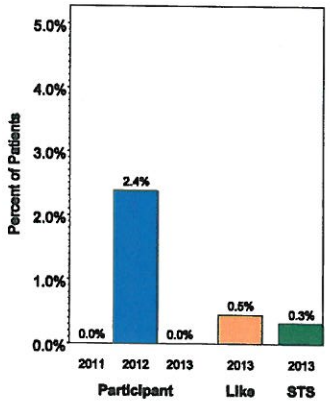
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

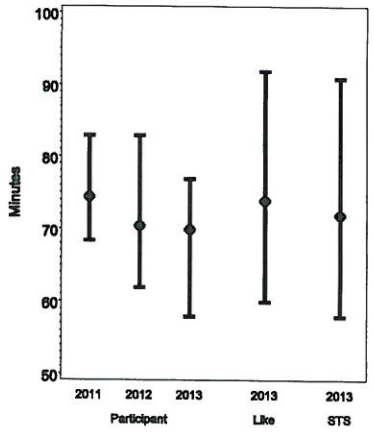
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
IABP	10.0%	7.1%	9.7%	2.1%	2.0%
Preop	0.0%	2.4%	0.0%	0.5%	0.3%
Intraop	5.0%	2.4%	9.7%	1.5%	1.4%
Postop	5.0%	2.4%	0.0%	0.2%	0.2%
Missing timing	0.0%	0.0%	-	-	-
Missing	0.0%	0.0%	0.0%	0.1%	0.1%
Robotic Technology Assisted	0.0%	0.0%	0.0%	0.1%	0.1%
Missing	0.0%	0.0%	0.0%	0.5%	1.1%
Cross-Clamp Time (min)					
Mean	82.3	74.6	73.8	78.9	77.7
Median	74.5	70.5	70.0	74.0	72.0
25th Percentile	68.5	62.0	58.0	60.0	58.0
75th Percentile	83.0	83.0	77.0	92.0	91.0
Cardiopulmonary Bypass Time (min)					
Mean	108.3	99.3	102.4	107.1	105.7
Median	94.0	92.0	97.0	99.0	98.0
25th Percentile	89.0	80.0	78.0	81.0	79.0
75th Percentile	115.0	106.0	110.0	124.0	123.0
Circulatory Arrest	0.0%	0.0%	0.0%	0.6%	0.5%
Missing	0.0%	0.0%	0.0%	0.7%	1.6%
Circulatory Arrest Time (min)					
Mean	-	-	-	32.0	33.4
Median	-	-	-	29.5	27.0
25th Percentile	-	-	-	15.0	6.0
75th Percentile	-	-	-	40.0	44.0
Skin Incision Duration (min)					
Mean	221.6	212.7	220.5	211.0	212.3
Median	204.0	201.5	210.0	197.0	198.0
25th Percentile	186.5	178.0	176.0	163.0	163.0
75th Percentile	235.5	237.0	244.0	242.0	244.0

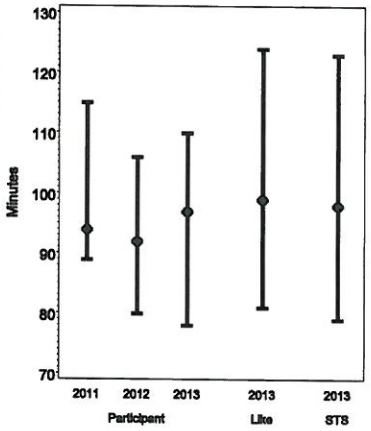
Preoperative IABP



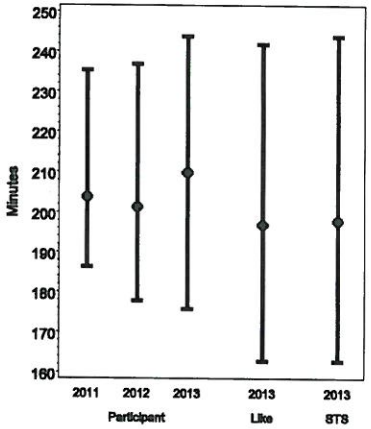
Cross-Clamp Time (min)
Median + 25th/75th Percentiles



CPB Time (min)
Median + 25th/75th Percentiles



Skin Incision Time
Median + 25th/75th Percentiles



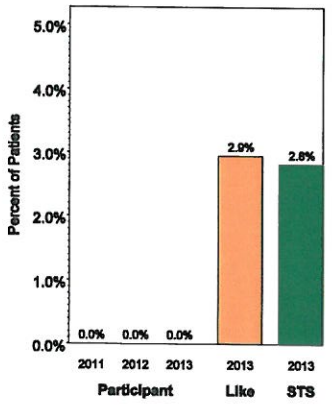
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

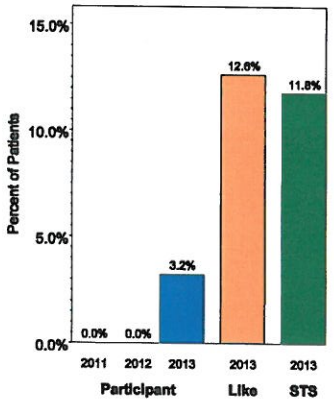
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
OR Duration (min)					
Mean	297.3	303.9	308.1	295.7	299.4
Median	268.0	287.0	303.0	281.0	285.0
25th Percentile	242.0	259.0	257.0	238.0	240.0
	357.5	364.0	339.0	335.0	340.0
Valve Surgery					
Aortic Annular Enlargement	0.0%	0.0%	0.0%	2.9%	2.8%
Missing	0.0%	0.0%	0.0%	0.9%	1.0%
Valve Replacement Type					
Mechanical	0.0%	0.0%	3.2%	12.6%	11.8%
Bioprosthetic	85.0%	100.0%	96.8%	82.6%	83.9%
Homograft	0.0%	0.0%	0.0%	0.5%	0.4%
Autograft	0.0%	-	-	-	-
Missing	15.0%	0.0%	0.0%	4.2%	3.9%
Antibiotic Selection[1, 2]	100.0%	100.0%	100.0%	98.5%	98.1%
Exclusions	0.0%	0.0%	3.2%	1.4%	2.0%
Missing	0.0%	0.0%	0.0%	0.9%	1.1%
Antibiotic Timing[1, 3]	100.0%	97.6%	100.0%	98.7%	97.8%
Exclusions	0.0%	0.0%	3.2%	0.9%	1.0%
Missing	0.0%	0.0%	0.0%	0.9%	1.1%
Antibiotics Discontinued[1, 4]	100.0%	100.0%	96.7%	97.1%	96.9%
Exclusions	0.0%	0.0%	3.2%	2.4%	2.5%
Missing	0.0%	0.0%	0.0%	1.0%	1.3%
Postoperative Information					
Blood Products Used	60.0%	35.7%	38.7%	36.6%	36.9%
Number of Blood Product Units Used					
1 Red Blood Cell Unit	10.0%	9.5%	3.2%	9.7%	10.8%
2 Red Blood Cell Units	30.0%	14.3%	19.4%	11.2%	11.0%
3 Red Blood Cell Units	5.0%	0.0%	0.0%	4.0%	3.8%
4+ Red Blood Cell Units	15.0%	9.5%	12.9%	7.7%	7.4%
1+ Fresh Frozen Plasma Units	25.0%	14.3%	16.1%	10.7%	11.1%
1+ Cryoprecipitate Units	5.0%	11.9%	6.5%	4.8%	5.0%
1+ Platelet Units	25.0%	9.5%	16.1%	11.6%	11.9%
Missing	0.0%	0.0%	0.0%	0.4%	0.3%

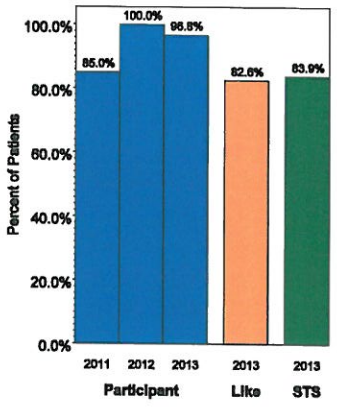
Aortic Annular Enlargement



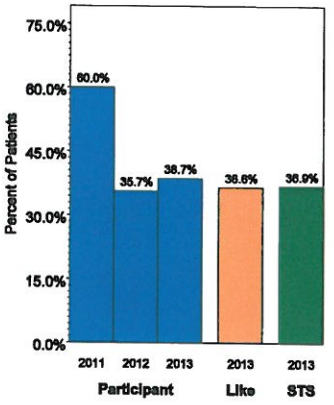
Mechanical Valve Replacement



Bioprosthetic Valve Replacement



Postop Blood Products Used



[1]All antibiotic measures are calculated among patients without exclusions (v2.73 only)
[2]First or second generation cephalosporin prescribed/given prophylactically
[3]Appropriate timing of prophylactic antibiotics
[4]Prophylactic antibiotics discontinued within 48 hours

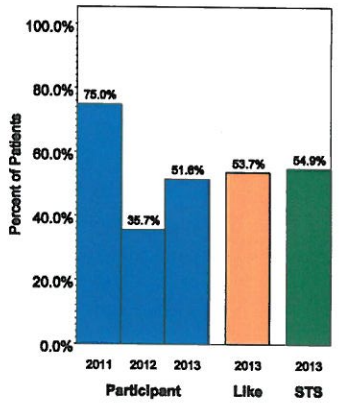
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

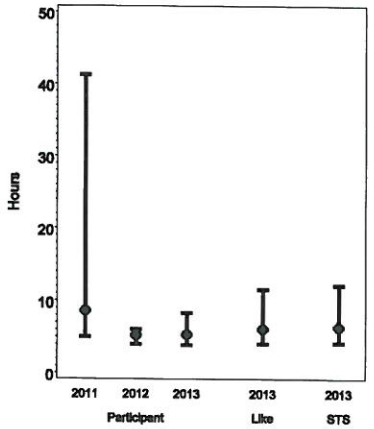
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Intraop/Postop Blood Products Used	75.0%	35.7%	51.6%	53.7%	54.9%
Total Number of Blood Product Units					
1 Red Blood Cell Unit	20.0%	9.5%	3.2%	9.2%	10.4%
2 Red Blood Cell Units	30.0%	11.9%	16.1%	15.4%	14.4%
3 Red Blood Cell Units	10.0%	0.0%	0.0%	6.8%	7.1%
4+ Red Blood Cell Units	15.0%	11.9%	22.6%	15.5%	15.8%
1+ Fresh Frozen Plasma Units	30.0%	16.7%	16.1%	20.6%	22.1%
1+ Cryoprecipitate Units	10.0%	14.3%	9.7%	8.8%	9.7%
1+ Platelet Units	35.0%	11.9%	25.8%	27.1%	28.4%
Missing	0.0%	0.0%	0.0%	0.1%	0.0%
Ventilation					
Total Ventilation Hours					
Mean	39.2	13.0	46.6	17.9	20.2
Median	8.7	5.4	5.4	6.2	6.5
25th Percentile	5.1	4.1	4.0	4.2	4.3
75th Percentile	41.3	6.2	8.4	11.7	12.2
Initial Ventilation Hours					
Mean	31.7	8.0	22.2	12.8	13.7
Median	8.4	5.2	5.4	6.1	6.3
Initial Ventilation <6 hours[1]	40.0%	71.4%	66.7%	47.9%	46.1%
Extubated in OR	0.0%	0.0%	3.2%	2.3%	2.3%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Reintubation	15.0%	7.1%	9.7%	3.8%	4.0%
Missing	0.0%	0.0%	0.0%	0.8%	0.4%
Additional Ventilation Hours[2]					
Mean	47.6	71.4	243.9	131.3	159.9
Median	44.0	81.0	249.6	67.0	69.1
ICU Stay					
Total ICU Hours					
Mean	94.3	76.8	106.2	70.2	72.6
Median	59.3	52.6	75.1	47.0	47.0
25th Percentile	48.3	28.3	42.6	25.0	25.1
75th Percentile	135.6	96.0	102.9	75.4	76.2

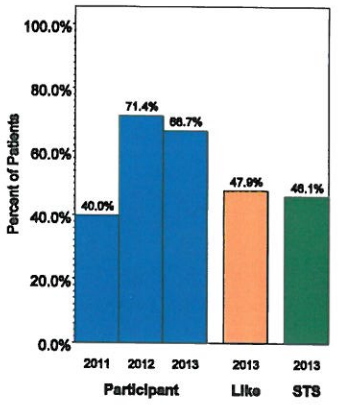
Intraop/Postop Products Used



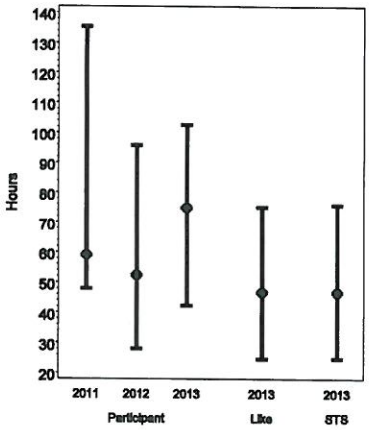
Ventilation Time
Median + 25th/75th Percentiles



Initial Ventilation <6 Hrs



Total ICU Hours
Median + 25th/75th Percentiles



[1]Excludes patients extubated in the OR
[2]Among patients reintubated

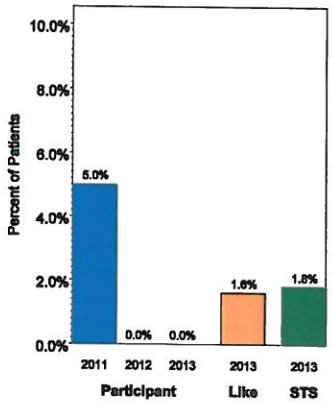
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

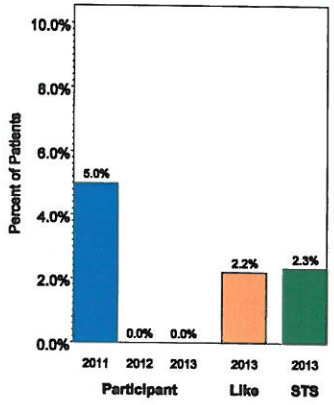
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Initial ICU Hours					
Mean	87.9	64.4	95.7	65.5	67.5
Median	55.7	49.8	59.7	46.2	46.2
Readmitted to ICU	5.0%	7.1%	6.5%	3.4%	3.5%
Additional ICU Hours[1]					
Mean	127.5	174.4	163.2	140.6	141.9
Median	127.5	138.0	163.2	72.0	70.0
Mortality Summary					
In-hospital Mortality	5.0%	0.0%	0.0%	1.6%	1.8%
Operative Mortality	5.0%	0.0%	0.0%	2.2%	2.3%
Mortality Risk-Adjustment[2]					
In-hospital Mortality					
Odds Ratio	1.04	0.76	0.82	0.93	1.00
Lower 95% Confidence Limit	0.57	0.30	0.25	0.67	-
Upper 95% Confidence Limit	1.86	1.95	2.69	1.28	-
O/E Ratio	1.63	0.00	0.00	0.89	1.00
Lower 95% Confidence Limit	0.09	0.00	0.00	0.76	-
Upper 95% Confidence Limit	6.95	2.67	6.00	1.03	-
Risk-adjusted Rate	3.6%	0.0%	0.0%	1.6%	1.8%
Operative Mortality					
Odds Ratio	1.02	0.75	0.77	0.93	1.00
Lower 95% Confidence Limit	0.61	0.31	0.23	0.71	-
Upper 95% Confidence Limit	1.70	1.83	2.54	1.23	-
O/E Ratio	1.37	0.00	0.00	0.95	1.00
Lower 95% Confidence Limit	0.07	0.00	0.00	0.83	-
Upper 95% Confidence Limit	5.83	2.22	4.64	1.07	-
Risk-adjusted Rate	3.6%	0.0%	0.0%	2.2%	2.3%

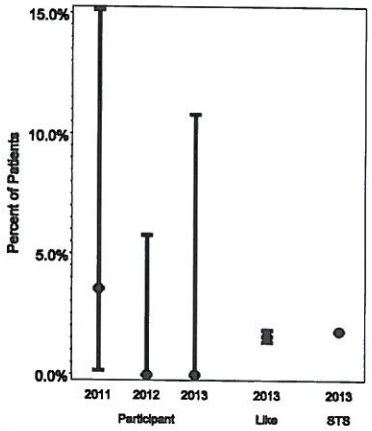
In-Hospital Mortality



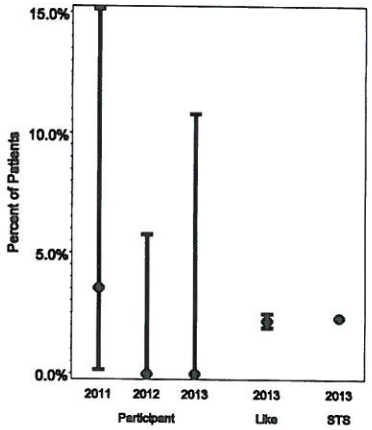
Operative Mortality



In-Hospital Mortality
Risk-adjusted rate + 95% CI



Operative Mortality
Risk-adjusted rate + 95% CI



[1]Among patients readmitted to the ICU

[2]Refer to the Report Overview for information on risk-adjustment methodology

Risk-adjustment is not performed on time periods of less than 6 months

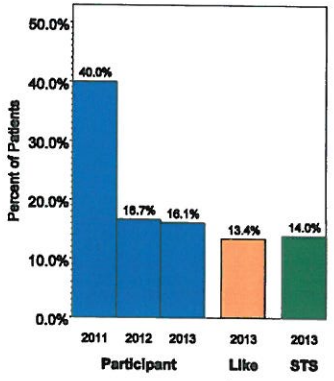
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

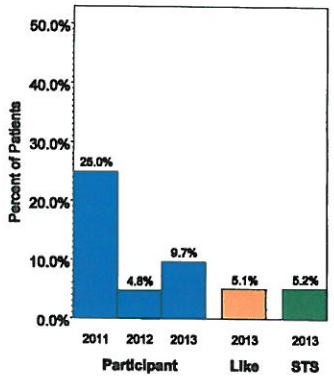
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Complications Summary					
Any Complications	60.0%	45.2%	45.2%	44.3%	45.7%
Any Major Complications / Operative Mortality	40.0%	16.7%	16.1%	13.4%	14.0%
Operative Complications					
Any Reoperation	25.0%	4.8%	9.7%	5.1%	5.2%
Reoperation for Bleeding	15.0%	0.0%	0.0%	3.2%	3.1%
Reoperation for Valvular Dysfunction	0.0%	0.0%	0.0%	0.1%	0.1%
Reoperation for Graft Occlusion	0.0%	0.0%	0.0%	0.0%	0.0%
Reoperation for Other Cardiac	0.0%	0.0%	0.0%	0.6%	0.8%
Reoperation for Other Non-Cardiac	10.0%	4.8%	9.7%	1.3%	1.6%
Perioperative MI[1]	5.0%	0.0%	0.0%	0.0%	0.0%
Infection Complications					
Any Infection	0.0%	2.4%	0.0%	1.2%	1.4%
Deep Sternal Infection/Mediastinitis	0.0%	0.0%	0.0%	0.2%	0.2%
Septicemia/Sepsis	0.0%	0.0%	0.0%	0.7%	1.0%
Neurological Complications					
Any Neurological	0.0%	2.4%	3.2%	3.6%	3.8%
Coma/Encephalopathy	0.0%	2.4%	0.0%	2.3%	2.4%
Permanent Stroke	0.0%	0.0%	3.2%	1.3%	1.4%
Transient Ischemic Attack	0.0%	0.0%	0.0%	0.3%	0.3%
RIND[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Paralysis	0.0%	0.0%	0.0%	0.2%	0.2%
Pulmonary Complications					
Any Pulmonary	30.0%	11.9%	9.7%	12.2%	13.2%
Prolonged Ventilation	25.0%	11.9%	9.7%	8.1%	8.8%
Pneumonia	5.0%	0.0%	6.5%	2.3%	2.4%
Pulmonary Embolism	0.0%	0.0%	0.0%	0.0%	0.0%
Pleural Effusion Requiring Drainage[2]	12.5%	2.4%	0.0%	4.5%	4.9%

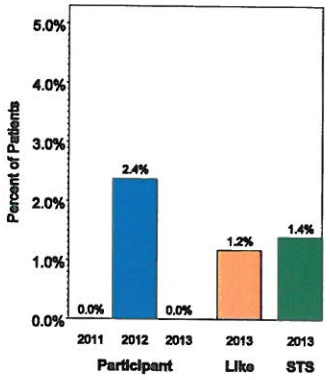
Major Morbidity/Operative Mortality
Observed rate



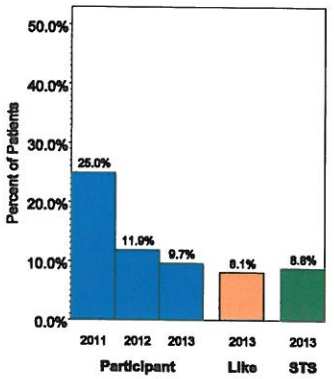
Any Reoperation
Observed rate



Any Infection
Observed rate



Prolonged Ventilation
Observed rate



[1]Variable eliminated for v2.73 data
[2]New variable for v2.73 data

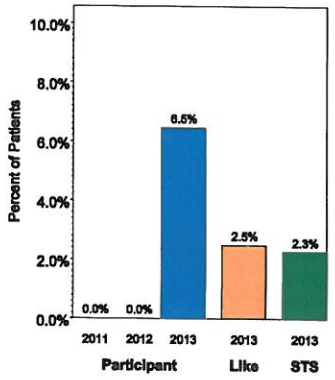
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

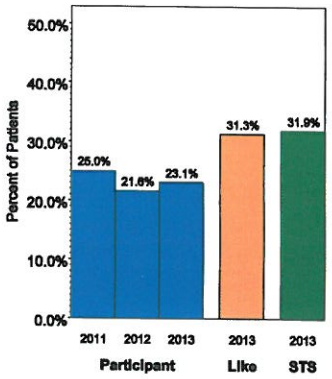
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Renal Complications					
Renal Failure[1]	0.0%	0.0%	6.5%	2.5%	2.3%
Vascular Complications					
Any Vascular	0.0%	0.0%	3.2%	0.2%	0.2%
Acute Limb Ischemia	0.0%	0.0%	3.2%	0.1%	0.1%
Other Complications					
Any Other	50.0%	31.0%	41.9%	36.7%	38.2%
New Onset Atrial Fibrillation[2]	25.0%	21.6%	23.1%	31.3%	31.9%
Recurrent Recent Atrial Fibrillation[3]	0.0%	0.0%	25.0%	11.7%	15.1%
Heart Block[4]	0.0%	0.0%	0.0%	0.0%	0.0%
Cardiac Arrest	5.0%	2.4%	0.0%	1.8%	1.8%
Anticoagulant Complication	0.0%	4.8%	6.5%	1.1%	1.1%
Tamponade	0.0%	0.0%	3.2%	0.1%	0.1%
Gastro-Intestinal Complication	0.0%	4.8%	9.7%	1.8%	2.1%
Multi-System Failure	0.0%	0.0%	0.0%	0.6%	0.7%
Discharge Location[5]					
Home	42.1%	71.4%	64.5%	74.0%	74.4%
Extended Care/TCU	57.9%	28.6%	35.5%	20.0%	20.2%
Other Hospital	0.0%	0.0%	0.0%	0.7%	0.6%
Nursing Home	0.0%	0.0%	0.0%	4.6%	4.0%
Hospice	0.0%	0.0%	0.0%	0.2%	0.2%
Other	0.0%	0.0%	0.0%	0.3%	0.4%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Discharge Medications[5]					
Aspirin	100.0%	92.9%	93.5%	86.7%	87.7%
Among Eligible Cases	100.0%	100.0%	93.5%	90.5%	90.9%
Contraindicated / Not Indicated	0.0%	7.1%	0.0%	4.2%	3.6%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
ACE Inhibitors	26.3%	54.8%	35.5%	36.0%	34.6%
Among Eligible Cases	35.7%	95.8%	37.9%	84.3%	83.1%
Contraindicated / Not Indicated	26.3%	42.9%	6.5%	57.3%	58.3%
Missing	0.0%	2.4%	58.1%	6.7%	7.0%

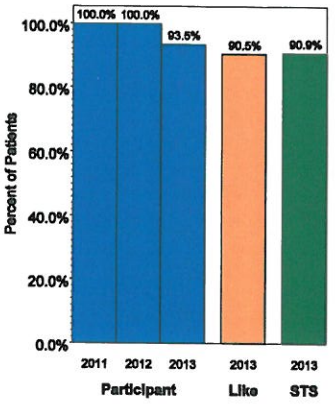
Renal Failure Complication
Observed rate



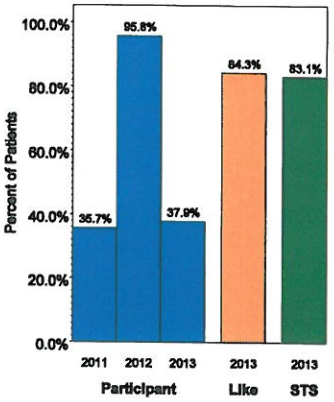
Atrial Fibrillation
Observed rate



Discharge Aspirin



Discharge ACE Inhibitors



[1]Excludes patients with preoperative dialysis or last creatinine > 4
[2]New Onset Afib excludes patients with preoperative atrial fibrillation
[3]Recent Recurrent AFib is among patients with history of recent afib (v2.73 data only)
[4]Variable eliminated for v2.73 data
[5]Excludes in-hospital mortalities

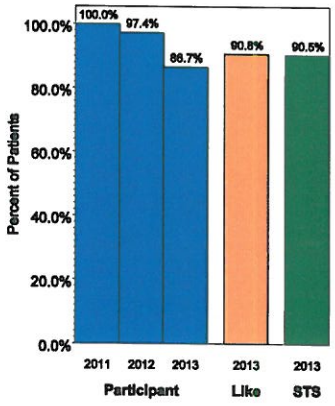
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

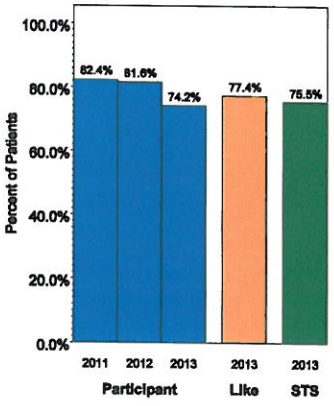
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Beta Blockers	94.7%	88.1%	83.9%	84.8%	85.0%
Among Eligible Cases	100.0%	97.4%	86.7%	90.8%	90.5%
Contraindicated / Not Indicated	5.3%	9.5%	3.2%	6.6%	6.1%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%
Lipid-Lowering Agents	73.7%	73.8%	74.2%	73.2%	72.1%
Among Eligible Cases	82.4%	81.6%	74.2%	77.4%	75.5%
Contraindicated / Not Indicated	10.5%	9.5%	0.0%	5.4%	4.5%
Missing	0.0%	0.0%	0.0%	0.1%	0.3%
ADP Inhibitors	5.3%	11.9%	0.0%	9.7%	9.6%
Among Eligible Cases	5.3%	11.9%	0.0%	9.7%	9.6%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.2%	0.3%
Antiarrhythmics	78.9%	81.0%	64.5%	37.8%	36.6%
Among Eligible Cases	78.9%	81.0%	64.5%	37.8%	36.6%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.2%	0.3%
Coumadin	10.5%	9.5%	6.5%	37.2%	35.4%
Among Eligible Cases	10.5%	9.5%	6.5%	37.2%	35.4%
Contraindicated / Not Indicated[1]	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.0%	0.0%	0.0%	0.2%	0.3%
Discharge Referrals/Counseling[2]					
Cardiac Rehabilitation Referral	100.0%	94.1%	100.0%	90.8%	85.9%
Missing	0.0%	0.0%	0.0%	0.2%	0.3%
Smoking Cessation Counseling	100.0%	100.0%	100.0%	85.6%	86.4%
Missing	0.0%	0.0%	0.0%	0.5%	0.9%

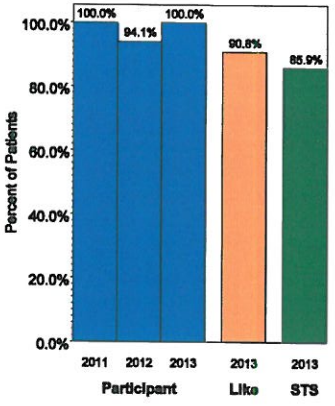
Discharge Beta Blocker



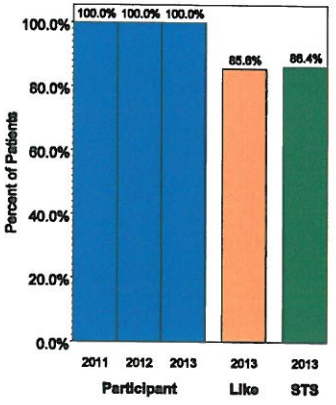
Discharge Lipid-Lowering Agent



Cardiac Rehabilitation Referral



Smoking Cessation Counseling



[1]For v2.73 data, the Contraindicated/Not Indicated option was deleted

[2]Excludes in-hospital mortalities and Not Applicable Records

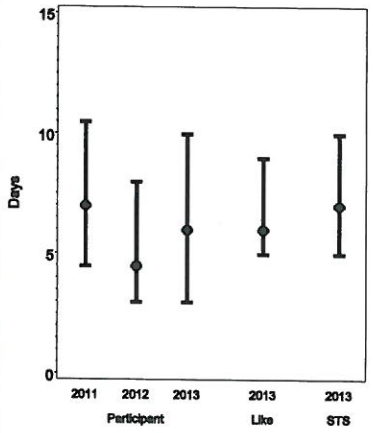
Isolated Aortic Valve Replacement Procedures
Data Summary

Participant 11103
STS Period Ending 12/31/2013

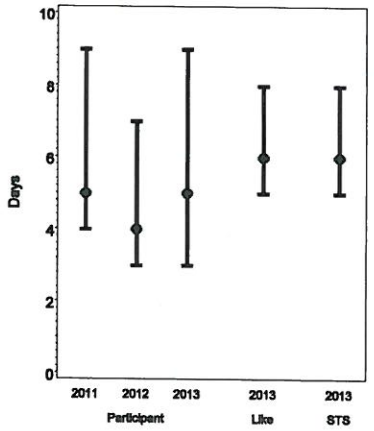
Duke Clinical Research Institute

	Participant 11103			Like Group	STS
	2011	2012	2013	2013	2013
Readmission and Reason[1]					
Readmitted within 30 days	10.5%	16.7%	9.7%	11.4%	10.0%
Anticoagulation Complication					
Valvular	0.0%	0.0%	0.0%	0.1%	0.0%
Pharmacological	0.0%	0.0%	0.0%	0.3%	0.3%
Arryhthmia/Heart Block	5.3%	4.8%	0.0%	2.0%	1.7%
Congestive Heart Failure	0.0%	2.4%	0.0%	1.4%	1.2%
MI and/or Recurrent Angina	0.0%	0.0%	0.0%	0.3%	0.2%
Pericardial Effusion / Tamponade	0.0%	0.0%	6.5%	0.9%	0.8%
Pneumonia or other					
Respiratory Complication	0.0%	4.8%	0.0%	1.6%	1.4%
Coronary Artery Dysfunction	0.0%	0.0%	0.0%	0.0%	0.0%
Valve Dysfunction	0.0%	0.0%	0.0%	0.0%	0.0%
Infection - Deep Sternum	0.0%	0.0%	0.0%	0.1%	0.1%
Infection - Conduit Harvest Site	0.0%	2.4%	0.0%	0.0%	0.0%
Renal failure	0.0%	0.0%	0.0%	0.1%	0.1%
TIA / Permanent CVA	0.0%	0.0%	3.2%	0.4%	0.2%
Acute Vascular Complication	0.0%	0.0%	0.0%	0.0%	0.0%
Subacute Endocarditis	0.0%	0.0%	0.0%	0.0%	0.0%
VAD Complication	-	-	-	-	-
Other	5.3%	2.4%	0.0%	3.8%	3.6%
Missing	0.0%	0.0%	0.0%	2.4%	4.3%
Length of Stay Summary					
Total Length of Stay (days)					
Mean	9.0	7.0	11.0	8.4	8.8
Median	7.0	4.5	6.0	6.0	7.0
25th Percentile	4.5	3.0	3.0	5.0	5.0
75th Percentile	10.5	8.0	10.0	9.0	10.0
Post-Procedure Length of Stay (days)					
Mean	7.2	5.9	9.2	7.1	7.4
Median	5.0	4.0	5.0	6.0	6.0
25th Percentile	4.0	3.0	3.0	5.0	5.0
75th Percentile	9.0	7.0	9.0	8.0	8.0
PLOS <6 days	50.0%	73.8%	54.8%	43.3%	40.7%
PLOS >14 days	10.0%	4.8%	16.1%	5.6%	6.2%

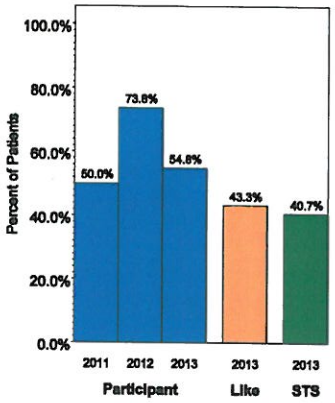
Total Length of Stay
Median + 25th/75th Percentiles



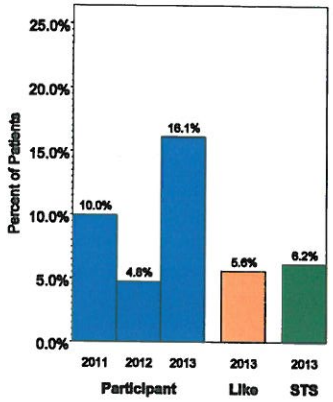
Postop Length of Stay
Median + 25th/75th Percentiles



PLOS < 6 days



PLOS > 14 days



[1]Excludes in-hospital mortalities