Welcome (and Thank you for your support!)
How did we get here?
A Little history about cardiac surgery/advanced heart failure therapy
The Future is NOW!!
Looking to the Future-What’s on the Horizon?
Apollo 11 was the spaceflight that landed the first two people on the Moon. Commander Neil Armstrong and lunar module pilot Buzz Aldrin, both American, landed the Apollo Lunar Module Eagle on July 20, 1969, at 20:17.

Armstrong's first step onto the lunar surface was broadcast on live TV to a worldwide audience. He described the event as "one small step for [a] man, one giant leap for mankind."

Apollo 11 effectively ended the Space Race and fulfilled a national goal proposed in 1961 by President John F. Kennedy: "before this decade is out, of landing a man on the Moon and returning him safely to the Earth."
Elon Musk, the tech visionary behind Tesla and SpaceX, once observed that “the single most important factor in professional growth” is to have “a feedback loop, where you’re constantly thinking about what you’ve done and how you could be doing it better.”
STS Database Physician Leadership

- Felix Fernandez, MD
- David Wormuth, MD
- Jeff Jacobs, MD
- Vinay Badhwar, MD
STS Database Staff Leadership
Evolution of Cardiac Surgery

Developmental Phase

• 1953-54 Cardiopulmonary bypass
• 1958 Sones - Cardiac catheterization
• 1960 Valve prostheses
• 1967 Coronary bypass surgery
Open Heart Surgery *(CPB Cases)*

How it Developed World-Wide

- **1950**: Harken and Starr Ball Valves 1960
- **1960**: Gibbon's ASD with Gibbon oxy. May 6, 1953
- **1970**: Lillehei's 1st VSD with cross circ. March 26, 1954
- **1980**: Cooley's 1st VSD April 5, 1956
- **1990**: 1st Ht. Transplants Barnard / Shumway 1967

- **2000**: 1.5 million
TECHNOLOGY EVOLVES

Sustaining Mastery
Over a Technology:
Building of firm foundations;
improving, augmenting, applying

Diminishing Returns

THE BREAKTHROUGH!

Pioneering
Engineering & Science:
Prospecting for new possibilities;
exploring, evaluating, inventing

MEASURE OF ADVANCEMENT

EXISTING TECHNOLOGY CURVE

NEW TECHNOLOGY CURVE

MEASURE OF APPLIED EFFORT
Coronary surgery relieves angina and prolongs life expectancy.
Not all CABG patents are the same -

**Historical Considerations**

1970’s – 80’s: advanced age, depressed EF associated with higher mortality in AMI and CABG

1989: indications for surgical treatment in acute MI - evolving MI less than 6 hours from onset in patients where PCI or thrombolytic unsuccessful

- post infarction angina hours to days after transmural myocardial infarction unyielding to max medical therapy

- IABP dependent patients in cardiogenic shock without mechanical defects

Cohn, L, Cardiology 1989:76(2):167-72
Background

1986 – Veterans Healthcare Administration conducts National VA Surgical Risk Study in 44 VA Medical Centers with goal of developing and validating risk-adjustment models to predict surgical outcomes

1984 – National VA Surgical Quality Improvement Program (NSQIP) established in all 132 VAMC’s performing surgery

1998 - Khuri et al present first national, validated, out-come based, risk-adjusted report outlining structure, data collection, analysis and reporting

2000 – 2015

Evidence supports that continuous quality assessment in NSQIP and process improvement enhances surgical outcomes
U.S. RELEASING LISTS OF HOSPITALS WITH ABNORMAL MORTALITY RATES

By JOEL BRINKLEY, Special to the New York Times
Published: March 12, 1988

WASHINGTON, March 11—The Health and Human Services Department is preparing to release lists of the nation’s hospitals that have mortality rates significantly higher or lower than the national average, the first such lists ever compiled.

The lists, provided to The New York Times and scheduled for general release on Wednesday, indicate that more than twice as many patients died at certain hospitals than would have been expected under national norms.

The lists were derived using case records from 10.7 million patients treated in 1984 whose bills were paid by Medicare, the Government program that assists the elderly and the disabled in paying their hospital costs. Nearly all the nation’s hospitals treat Medicare patients, who make up almost half of all hospital patients. 'It Is Not a Report Card'

Several New York hospitals were identified as having higher-than-average mortality rates for elderly Medicare patients. [Page A22.] But Federal officials warned that the statistics
Performance metrics should be based on risk-adjusted clinical data.
It Is Time for a National Cardiothoracic Surgical Data Base

Richard E. Clark, MD
Surgery Branch, National Heart, Lung, and Blood Institute, Bethesda, Maryland

The Society of Thoracic Surgeons will soon sponsor an opportunity for its members to participate in a national clinical data base system for cardiac and thoracic operations and outcome. This effort by the STS to establish a national data base is more than 5 years old. An ad hoc committee initiated a pilot program that, unfortunately, did not evolve to national scope. The development of small portable computers that were fast and interactive and had large storage capabilities has made possible the formation of many local data bases for cardiac surgery. The time is now ripe for those with existing data bases and those who have none at present to participate in this national effort.

The reasons for the initiation of this program by the STS are many. The formation of a group to undertake the effort was prompted by the release by HCFA (Health Care Financing Administration), a component of the Department of Health and Human Services, of raw mortality data for Medicare patients undergoing coronary artery bypass grafting procedures without respect to any of the then-known risk factors associated with patients during coronary artery disease.

The Standards and Ethics Committee of the STS released its “Statement of Concern” with approval of Council late in 1986, which was well received by practitioners and hospitals. The Standards and Ethics Committee at the Toronto meeting of the STS in September of 1987 developed a proposal for the Council for the development of a national data base system sponsored by the STS.

The pressing need was clearly evident from a number of artery operations carried little or no risk was perpetuated. A third driving force was the action of the JCAHCO (Joint Commission on Accreditation of Health Care Organizations). Quality assurance programs for every segment of the health care system were required. Recredentialing on a yearly basis was to occur based on the previous year’s clinical performance by the practitioner. Clearly, results of the surgeons were going to be readily evident in contrast to those of psychiatrists. Finally, Congress required of HCFA and a suborganization, the PPRC (Physicians Payment Review Commission), a complete study and review of physicians’ billings and payments under the Medicare system with the requirement of reporting the results in late 1989 and early 1990. The purpose was to decrease the rate of increase in health care costs, which have been substantially exceeding the inflationary rate for more than a decade. The initial report by the investigator (Hsiao) to the HCFA recommended a rearrangement of payment schemes with greater weight given to so-called cognitive skills than to technical ones. Cardiothoracic surgeons were to receive a reduction in payments of 25% to 30%. The need, therefore, to determine accurately the amount of services provided in toto by the cardiothoracic community had become acute.

Edmunds and Kaiser, in their preface to the report of the Committee for the state of the art symposium on coronary arterial surgery, made a pertinent strong plea.

Proper solution to the risk-benefit equation requires knowledge of the natural history of the disease and of the incremental risk factors that affect operative mortality and long-
STS database established 1989, now ≈ 90 - 95% of adult CT programs in US
>6.8 million adult cardiac patient records

STS National Database

The STS National Database was established in 1989 as an initiative for quality improvement and patient safety among cardiothoracic surgeons. There are three components to the STS National Database, each focusing on a different area of cardiothoracic surgery—Adult Cardiac, General Thoracic, and Congenital Heart Surgery, with the availability of Anesthesiology participation within the Congenital Heart Surgery Database. The database has grown exponentially over the years, both in terms of participation and stature.

Quality Improvement
Membership organization to Enhance the ability of cardiothoracic surgeons to provide the highest quality patient care through education, research, and advocacy

STS Mission

7,500 Members in 99 Countries
Membership by Discipline*

*Among those who have reported their disciplines.
STS and Intermacs

STS National Database

Intermacs Mechanical Circulatory Support

STS NATIONAL DATABASES

AS OF JANUARY 1, 2019

STS CONGENITAL

STS ADULT

STS THORACIC

STS INTERMACS
Ultimate Goal is Improvement, Not Measurement

Use STS data to establish evidence-based best practices and document quality improvement
Portfolio of Composite Measures for the Most Common Cardiac Procedures

- Isolated CABG
- Isolated AVR
- AVR + CABG

Cardiac Surgery Quality

- Isolated Mitral Repair
- Mitral Repair + CABG
- MVR
- MVR + CABG
The STS Risk Calculator allows a user to calculate a patient's risk of mortality and morbidity, such as long length of stay and renal failure. The Risk Calculator incorporates the STS risk models that are designed to serve as statistical tools to account for the impact of patient risk factors on operative mortality and morbidity.

Click here to start using the STS Risk Calculator.
STS Database Opportunities

• Limited automated data extraction, requires skilled data managers completing data collection forms on paper or electronically (currently, 5 major EMR vendors in use).

• Site reports as PDF, compared to STS aggregate at regular intervals (6 months), are difficult to interpret

• Media scrutiny, congenital public reporting/star rating raised questions about risk stratification; led to secondary analysis of STS Risk Modeling by Harvard Research Group at significant cost and time (18 months)

• Database participation is resource-intensive and expensive

• Star rating system provokes comparisons by programs primarily for marketing purposes; true quality assessment and improvement should be within programs ie. Better than, equal to or worse than expected outcomes compared to risk adjusted metrics
STS Database Modernization Opportunities

• Sites want mobile based patient follow-up applications
• Real-time feedback reports/dashboard and patient-reported outcomes analysis
• Ideal Framework would include a web-based system that allows sites to manage data and reporting from one system
• Develop modular participation fee schedule/discount for high volume centers
• Growth opportunities to expand thoracic surgery participation in the future
Linkage of Medicare Records to the Interagency Registry of Mechanically Assisted Circulatory Support
Qixing Liang, BS,* Sarah Ward, MD,* Francis D. Pagani, MD, PhD, Shashank S. Sinha, MD, MS, Min Zhang, PhD, Rob Kormos, MD, Keith D. Aaronson, MD, MS, Andrew D. Althouse, PhD, James K. Kirklin, MD, David Naftel, PhD, and Donald S. Likosky, PhD

- Using a merged data set of MCSDs implanted between 2008 and 2013, we report that the vast majority of CMS centers and Medicare beneficiaries receiving MCSDs are increasingly captured in INTERMACS.
- Accordingly, contemporary studies in INTERMACS are relevant and generalizable to the Medicare population.
Status Update on the STS/Northwestern University project to acquire longitudinal data in the STS National Database

• The objective of the project is to acquire longitudinal mortality (>30 days), reoperation follow-up, and socioeconomic status (SES) data for the patient records captured in the STS National Database

• The NDI search file for the patient records in the ACSD, CHSD, and GTSD will be optimized and submitted to the CDC by the end of November.

• STS anticipates paying CDC approximately $1 million in December 2019 (capitalized expense) to execute the NDI search.

• STS anticipates receiving results of the NDI search by mid-February 2020.

• March 2020 – STS will collaborate with Northwestern University on the work to adjudicate and merge the SES, Reoperation, Death (fact, time and cause of death) data into the supplemental datasets that correspond to the ACSD, CHSD, and GTSD.

• STS anticipates that by July 2020 the project will be completed and the supplemental data sets will be available for inquiry.
Individual Surgeon Performance in Adult Cardiac Surgery

• The Society of Thoracic Surgeons (STS) is developing plans to operationalize its Individual Surgeon Composite Measure [1], which was published in 2015 and subsequently endorsed by the National Quality Forum.

• The goal of this initiative is to provide STS Adult Cardiac Surgery Database participating surgeons with feedback regarding their individual, nationally benchmarked performance scores. This is a natural next step in the continuing evolution of the STS quality program.

• *What do you think?*
STS public reporting

• Best data and analytical methodologies: NQF-endorsed, broad acceptance by providers and external stakeholders
• Promotes patient *Autonomy*
• *Beneficence*: one way to improve quality
• Potential impact on consumers and the market
• Pre-empt less responsible and credible reporting initiatives
Heart Bypass Surgery Ratings

There are more than 1,000 surgical groups in the U.S. that perform heart bypass surgery. About 90 percent of these groups provide performance data to The Society of Thoracic Surgeons, a nonprofit organization that represents heart surgeons and other doctors who operate on the chest. The surgical groups in these ratings are those that agreed to share data with Consumer Reports. If a group you are interested in is not listed here, ask the heart surgeons if they would show you their results, and if they plan to share them publicly in the future. Read more about the heart bypass ratings and treating heart disease.
“Science tells us what we can do;

Guidelines what we should do; &

Registries what we are actually doing.”

Lukas Kappenberger MD
Heart Rhythm Society Policy Conference
Washington DC 2005
Are our innovative efforts in quality and safety improving patients’ lives?
The Society of Thoracic Surgeons — Innovation in Patient Safety and Quality at the National Level

• The 2019 John M. Eisenberg Patient Safety and Quality Awards trumpet the accomplishments of those individuals and organizations who have made significant and long-lasting contributions to improving patient safety and health care quality.

• “The Eisenberg Awards are an annual reminder that we, as a nation, cannot take health care quality and safety for granted, and significant work remains to improve the care experienced by every person in communities across the country.”

• —Dr. Shantanu Agrawal president and chief executive officer National Quality Forum
What Does the Future Hold for the Database?

- Streamlining of data fields and refine key adverse event definitions.
- Develop quality outcomes metrics via NQF process
  - Short-term Index Hospital Metrics
  - Revitalize existing Longitudinal Metrics.
- Establish public reporting structure and practice
- Define International alliances
- Strengthen Industry and FDA partnerships and mission
If you want to go fast, go alone
If you want to go far, go together
African Proverb