Direction of the STS National Database

Felix G Fernandez MD MSc
Chair, Workforce on National Databases
No Disclosures
STS National Database
Current State:
Nationally Recognized
Gold Standard Clinical Registry
STS Quality Program - 2019 Recipient of the:
John M. Eisenberg Patient Safety and Quality Award
for Innovation in Patient Safety and Quality at the National Level

• Awarded by Joint Commission and National Quality Forum

• Acknowledges:
  • Dedication to improving healthcare quality and safety
  • Leadership in measuring and reporting quality and safety data
  • Making information accessible to public to facilitate healthcare choices
Benchmark Clinical Registry

• Granular data elements designed by clinicians
• Virtually all adult cardiac programs and majority of congenital programs
• Complete census (not sample) of a program’s cases
• High data element accuracy (95-97%)
  • External audit
  • <2% missing data on operative mortality

• Summary: nationally representative, granular and accurate
Quality Measurement

- Several procedure-specific risk models and performance measures

- Most measures are multidimensional composites: risk-adjusted morbidity and mortality

- 35 National Quality Forum endorsed quality metrics
  - External validation of meeting the highest methodologic standards
  - Establishes stakeholder confidence in accuracy of measures
Quality Improvement

• Feedback reports to participants
  • Primary driver of QI
  • Comparisons of risk-adjusted outcomes to national benchmarks

• Demonstrated improvement in outcomes over time (CABG 1998-2016)
  • Mortality decreased 31%
  • Renal failure decreased 56%
  • Stroke decreased 43%
  • Reoperations decreased 65%
  • Sternal wound infections decreased 50%
Public Reporting - Transparency

• STS performance measures are basis for highly regarded voluntary public reporting program

• No other specialty approaches this level of voluntary reporting

<table>
<thead>
<tr>
<th></th>
<th>% Enrolled</th>
<th>Unique STS consents / US &amp; Canada participants</th>
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</thead>
<tbody>
<tr>
<td>ACSD</td>
<td>72.1%</td>
<td>781 / 1082</td>
</tr>
<tr>
<td>CHSD</td>
<td>84.6%</td>
<td>99 / 117</td>
</tr>
<tr>
<td>GTSD</td>
<td>34.1%</td>
<td>98 / 287</td>
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Research

• All research from STS database is focused on improving quality:
  • Benefits all STS members and our patients
  • Critical to advancing quality in CT surgery

• Data from STS DB robust and nationally representative
  • No other CT surgery data source meets this criteria

• Hundreds of high impact publications
STS National Database: Evolving for the Future
New Data Warehouse Selected!

- IQVIA, a leading global provider of advanced technology solutions

- Transition of the STS Database underway
  - User acceptance testing ongoing
  - Pilot testing will begin in November
  - Go live January 1, 2020
Upcoming Technology Enhancements:

- Modern new platform
- Cloud based
- Interactive dashboard reporting
- Near-real time data access
- Streamlined data collection
- Improved Data Quality Reports
- Direct web-based data entry (Coming Soon)
- Interoperability standards
- Experience with EHR extraction
Enhanced User Interface and Functionality

- IQVIA developing customizable dashboard reporting for all registries
  - Continuously updated summaries
  - Case volumes and unadjusted outcomes - Available January 1, 2020
  - Future: continuously updated risk-adjusted outcomes

- Dashboards specified by surgeon leaders and core group members from each specialty

- Iterative process with enhancements to be continually added
Analytics

• DCRI will remain core analytic center for ACSD, CHSD & GTSD

• DCRI will facilitate:
  • development and application of risk models/performance measures
  • public reporting
  • research
  • ad hoc analyses

• Other analytic centers may be used for select projects
Reducing Data Collection Burden

• Data element reduction (without sacrificing granularity)
  • In specification upgrade process data elements graded and prioritized
  • Data elements removed if they served their purpose
  • Field formatting to allow for multi-select fields

• Over 30% data element reduction in upcoming ACSD upgrade!

• We advocate against an optional “database lite” version
  • STS DB would lose its national penetration and representativeness
Reducing Data Collection Burden: Automated or Facilitated Extraction

• Engage with Vendors and EHRs to facilitate or automate extraction of data elements from EHR:

  • Structured data elements:
    • Demographics, labs – suitable for automated extraction

  • Unstructured data elements (e.g. ATN, AKI, ARF):
    • Embed STS data fields as structured data elements for automated extraction
    • Natural language processing to facilitate extraction
Reducing Data Collection Burden
Automated Extraction

• IQVIA is able to help with:
  • Facilitating automated extraction by ensuring that STS data elements conform to electronic data standards where possible

• Informatics Task Force commissioned to begin the process
  • Participated in ACSD upgrade
  • Initiatives in development:
    • Auto-populate some ACSD data fields in cardiac risk calculator
    • Pilot automated data entry in anesthesia module
Reducing Data Collection Burden
Enhancement of Surgeon Worksheets

- 7 worksheets are available for surgeons to help data abstractors collect detailed procedural data elements
  - Procedures of the Aorta
  - Aortic valve
  - CABG
  - Intraoperative TEE post-procedures
  - Mitral valve
  - Tricuspid and pulmonic valve
  - Atrial Fibrillation/Maze Procedures

- Increased usability of the worksheets could increase uptake and decrease burden
Expanding Longitudinal Follow-up Capabilities

- Long-term survival data through linkage to National Death Index
- Reoperation follow-up through internal linkage of patient records
- Socioeconomic data through linkage to US Census and American Community Survey
  - Uses street address and geocoding technology
  - Information on income classification, education level, household crowding, deprivation score, and other details
- Facilitated access to Medicare data for purposes of quality assessment (Section 105 of MACRA)
VATS vs Thoracotomy
Stage I Lung Cancer

Fig 1. Kaplan-Meier curves are shown for propensity-matched cohorts of (A) clinical stage I patients and (B) pathologic stage I patients. Univariable Cox models were also performed, and the hazard ratio (HR) of video-assisted thoracic surgery (VATS) to thoracotomy is shown within the figure with 95% CI and P value.

Boffa et al. Journal of Clinical Oncology. 2018
Quality of Life: Patient Reported Outcomes

• Symptoms and quality of life are high priorities for patients:
  • “How will I feel and function?”

• PRO: Any report of the status of a patient’s health condition coming directly from the patient

• PRO Task Force commissioned to explore integration of PROs

• IQVIA platform will facilitate future PRO data collection
  • Patient Reported Outcomes Measurement Information System (PROMIS)
  • Example: physical function, pain and dyspnea measures
Patient Reported Outcomes
VATS Lobectomy

Specialty Specific Initiatives:

• ACDS
  • Data element reduction – up to 30%

• CHSD
  • Reassessment of risk models/performance measures in collaboration with Harvard
  • Updating of STAT categories

• GTSD
  • Updating of oncologic staging fields

• Intermacs
  • Begin process of risk model and performance measure development
Other Initiatives:

• Expanding STS performance improvement efforts
  • Voluntary participant support program that allows programs to request focused evaluation and assistance for quality improvement

• Advocate for preferential use of STS metrics by all external rating organizations
  • STS measures are peer reviewed, NQF endorsed, and considered the gold standard in the specialty

• Use of STS measures by commercial and government payers
  • Example: 90 day CABG bundle
  • Feasible because STS penetrance is near universal (ACSD)

• Data Manager engagement: Focus of 2020
  • Live webinars for each database (starting in November)
  • New Data Manager training (starting first quarter 2020)
Summary

• The STS ND is a gold standard clinical registry
• Technological enhancements through partnership with IQVIA:
  • Interactive customizable dashboards
  • Near-real time access to data
  • Facilitated data capture and submission
• Reduction of data collection burden
• Longitudinal follow-up and PROs to enhance outcome assessment
• The STS ND is evolving for the future to provide maximal value for our patients and members