Solving Definitional Issues at the Society of Thoracic Surgeons

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DISCLOSURES

None
Presentation Topics

1. Background information on the Society of Thoracic Surgeons registries:
   - Focus on the Adult Cardiac Surgery Database

2. Standardized Definitional System

3. STS Approaches to Clarify, Revise or Add New Data Definitions
   - Scheduled changes
   - Ad hoc changes
   - Examples
Why is the current ASA/AQI Quality & Reporting Executive discussing STS definitional issues?
- Prior to position at ASA/AQI, STS Director of Quality for 3.5 years.

DISCLAIMER:
- The views expressed in this presentation are solely my own and should not be attributed to any professional association or other organization regardless of any affiliation I may have with such entities.
The STS National Databases

Considered the Crown Jewels of the Society

Established in 1989

- Comprised of 3 databases:
  - Adult Cardiac Surgery: 6 million cases
  - Congenital Heart Surgery: 373,000 cases
  - General Thoracic Surgery: 435,000 cases
Adult Cardiac Surgery Database (ACSD)

- Utilizes standardized conceptual definitions
- Overseen by a formal committee structure
- Data is entered into STS Certified Software by trained data abstractors (Data Managers)
- Hundreds of fields in a 17 page data collection form
- Approximately 2 hours for a Data Manager to enter one case
Standardized Definitional Process

- Standardized definitions should be:
  - Clinically fit-for-purpose
  - Convey the appropriate meaning for the field
  - Are described in colloquial language
  - Conform with national standards when possible
  - Are from reliable, prevailing, generally accepted sources – CDC, AORN, AHA, etc.
Conform with National Standards or Generally Accepted Sources

- Valve Replacement Unique Device Identifier (UDI)
  - FDA website is referenced

- Post-op Surgical Site Infection
  - Centers for Disease Control Prevention

- Previous MI
  - ACCF/AHA definitions referenced
Each data element includes:

- Field name and number
- Definition
- Intent/Clarification
  - Often lengthy with a great deal of detail
- All FAQ’s associated with the field.
Approaches to Clarify, Revise or Add New Data Definitions to the ACSD

Two Approaches:

1. Planned Periodic Specification Updates

2. Ad hoc adjustments
ACSD Planned Specification Updates

- Data points added and definitions updated during scheduled specification updates:
  - Takes place once every three years
- Workgroup made up of technical experts:
  - Cardiac Surgeons actively involved in the ACSD
  - Seasoned Data Managers
  - STS Staff
  - Data Warehouse (Duke Clinical Research Institute)
    - Project Manager
    - IT Staff
    - Statisticians
Why is the Specification Update Every Three Years?

There is a need to maintain a large stable data set to develop risk adjustment models and support research.

- Low volume procedures
- Rare outcomes / adverse events

Example: AVR + CABG Procedures

- Performed much less frequently than solo CABG or AVR
- AVR + CABG composite score is a rolling 3 year time period.
AVR + CABG Composite Measure
Star Ratings for Public Reporting

Composite score based upon:

- Risk-adjusted mortality
- Risk-adjusted morbidity
  - Reoperation, Stroke, Kidney Failure, Sternal Infection, and Prolonged Ventilation.
- 97.5 percent probability that the performance of any specific provider is lower than average (one star) or higher than average (three star).
AVR+CABG Scores by Hospital

Based upon data from January 2013 – December 2015

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<th>Name</th>
<th>Overall Composite Score</th>
<th>Absence of Operative Mortality</th>
<th>Absence of Major Morbidity</th>
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<td>★★★</td>
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<td>★★</td>
<td>★★</td>
<td>★</td>
</tr>
</tbody>
</table>
Three Year Specification Upgrade Continued

Second Reason – Its Time Consuming.
• 6 – 9 month process
• Workgroup meets
  o 1 face to face meeting
  o 10 – 12 conference calls

Third Reason – Its Expensive
• Data warehouse fees to map data elements between versions.

Fourth Reason – Change is Difficult
• Data Manager Education and Adjustment Period
Specification Upgrade Task Force Duties

Comprehensive review of the standardized definitions:

- Ensure compliance with standardized definitional system requirements
- Determine if updates are needed due to changes in clinical practice
- Anticipate upcoming research needs

Evaluate Data Manager FAQ’s for an indicator of:

- How well the definitions convey the appropriate meaning for the field
- If the definition describes the data point in colloquial language
Frequent Questions: Data Element #4870
Post-Op-Renal-Renal Failure

Version 2.73: Acute renal failure or worsening renal function resulting in ONE OR BOTH of the following:

• Increase of serum creatinine to > 2.0 AND 2x most recent preoperative creatinine level and/or
• A new requirement for dialysis postoperatively.

Version 2.8 Definition changed to

• Increase in serum creatinine level X 3.0, or serum creatinine level ≥4 mg/dL with at least a 0.5 mg/dl rise, or decrease in GFR by 75%; UO <0.3 mL/kg/h for 24 hours, or anuria for 12 hours and/or
• A new requirement for dialysis postoperatively

Source: RIFLE classification system
Percent of Stenosis in Vessels

- If multiple sources are available, select surgeon’s documentation degree of stenosis. This is the degree of stenosis (s)he used to develop the operative plan.

Diffusing Capacity of the Lung for Carbon Monoxide (DLCO) Predicted

- Which value should be used, DLCOuncorrected, DLCOcorrected, DLCO/VA?

01/2017: Following discussion with pulmonary specialists and surgeon leadership, use DLCOunc. If more than one value for DLCOunc is available, choose the lowest value.
Ad Hoc Changes: Data Managers Play a Key Role

According to a 2016 Survey Data Managers are:

- 73% Nurses
- 20% Other clinical staff
- 21% Full time abstractors
- 47% Divide their time between abstracting and QI activities
- Take their work very seriously
- Serve as the boots on the ground
Data Managers Highly Trained

STS offers an annual 2.5 day Data Manager training session

- 500+ Data Manager attendees
- Review new data elements
- Review data elements that have resulted in frequent questions
- Case scenarios: clarification of intent and proper coding
Ad Hoc Process

FAQ electronically sent to:

- Subject Matter Expert (seasoned Data Manager)
  - Contracted with STS to review FAQ’s on a weekly basis
  - Answers FAQ and updates user manual
Ad Hoc Process for a New Topic

• Subject matter expert contacts the Technical Advisory Group:
  o Cardiac Surgeons actively involved in the ACSD
  o Data Managers
  o STS Staff
• Typically meet quarterly or as needed
• Decision made and training manual updated
Ad Hoc Process

Question not addressed in manual

Clinical Question Request Form submitted to STS

Question reviewed by SME

SME does not know answer

Advisory Group: reviews, answer questions and adds to manual

SME answers question and adds to manual
Example of an Ad Hoc Clarification

Change in Practice

Data Element # 400: Tobacco Use
- Electronic cigarettes (Ecig) = "No" Electronic cigarettes are not considered tobacco products. (05/2015)

Data Element # 485: Liver Disease
- Patients with a history of Hepatitis C treated with medications may test negative, should liver disease be coded yes or no?
  - These patients should be coded as yes for liver disease.
• FAQ 01/2017: Can valve data be obtained from MRI reports?
  o Answer: Yes, if the information is included in the MRI dictation it can be used to document valve disease.

• FAQ 01/2017: Can data that is 7 months old be used for patients being worked up for LVAD/Transplant?
  o Answer: No, information should be from studies done within 6 months of the procedure.
Challenges: Historical Data Points

• Clinical status of the patient prior to entering the operating room
  o Elective
  o Urgent
  o Emergent
  o Emergent Salvage

Intent/Clarification and FAQ’s include 888 words
What are the definitions based upon?
Clinical Status Definitions

• **Elective:** The patient’s cardiac function has been stable in the days or weeks prior to the operation. The procedure could be deferred without increased risk of compromised cardiac outcome.

• **Urgent:** Procedure required during same hospitalization in order to minimize chance of further clinical deterioration.
Clinical Status Definitions Continued

**Emergent** – Patients requiring emergency operations will have ongoing, refractory (difficult, complicated, and/or unmanageable) unrelenting cardiac compromise, with or without hemodynamic instability, and not responsive to any form of therapy except cardiac surgery.

**Emergent/Salvage** - The patient is undergoing CPR enroute to the OR prior to anesthesia induction or has ongoing ECMO to maintain life.
FAQ Examples

If the patient is admitted to have an intra-aortic balloon pump (IABP) inserted preoperatively is the case status elective or urgent?

- **Elective** – While the Urgent/Emergent reasons include IABP, the patient was stable and at home prior to entering the hospital.

The patient went to OR electively for TAVR, which was converted to an open sternotomy emergently; what is the status?

- **Emergent**
Interesting STS Data Facts

• STS collects 8 different data points related to death
  o All cause mortality with in 30 days
  o Cause of death
  o Location of death
  o Method of verification of death
Fit for Purpose: Stroke Data Points

STS
Any confirmed neurological deficit of abrupt onset caused by a disturbance in blood supply to the brain that did not resolve within 24 hours.

Type of stroke:
• Hemorrhagic
• Embolic
• Undetermined

AQI
The sudden death of neurons in a localized area of brain due to inadequate blood flow as a result of emboli, thrombus, or hemorrhage that produces motor, sensory, or cognitive dysfunction (e.g. hemiplegia, hemiparesis, aphasia, sensory deficit, impaired memory) that persists for more than 24 hours.
## Fit For Purpose: Gender

**STS**

Indicate the patient's sex at birth as either male or female.

Clarification: Patients who have undergone gender reassignment surgery maintain the risk associated with their chromosomal gender.

**AQI**

Sex recorded in the medical record.

Clarification: The data from most medical records may not permit distinguishing between a patient’s sex and their current gender identity.
Fit For Purpose

STS: Post-op Cardiac Arrest

Acute cardiac arrest documented by one of the following:
• Ventricular fibrillation
• Rapid ventricular tachycardia with hemodynamic instability
• Asystole
• ICD shocks

4 data points related to “circulatory arrest”

AQI Cardiac Arrest

Unplanned cessation of the mechanical activity of the heart as confirmed by the absence of signs of effective circulation.
In Closing:
STS’s Approach to Definitional Issues

• Utilizes a Standardized Definitional Process
• Definitional issues are overseen by a formal committee structure:
  o Workgroups with subject matter experts help determine definitions
  o Data Managers
    – Are well trained
    – Are encouraged to submit questions
    – Act as on the ground reality checks
• Questions are answered promptly and circulated widely.
Thank you!