The ACSD Audit Process and Results

Richard S. D’Agostino, M.D. & Barbara Sanders, VP of Operations, CRS
October 24, 2019
Disclosures

None
STS-ACSD

• Celebrating its 30th anniversary this year
• Has become the gold standard of clinical databases
• Contains approximately 7 million entries
• Voluntary registry
• Has become the “source of clinical truth” in cardiac surgery
  ➢ Participants
  ➢ regulatory/policy agencies
  ➢ patients/consumers
  ➢ Underpins quality improvement efforts in cardiac surgery
Data Integrity is Key

• STS employs both internal and external validation
  • Internal: data completeness checks by DCRI
  • External: independent audits started since 2006
    • Validate: comprehensiveness, consistency, accuracy
      ➢ 2006-2017: Telligen
      ➢ 2018: Cardiac Registry Support, LLC
External Audit Methodology

• 2018 audit:
  • 100 variables (V 2.81) selected for re-abstraction
• Variables are selected based on relevance:
  ➢ essential to the data collection process
  ➢ are defined quality metrics
  ➢ those that impact risk models
For the Current 2018 Audit (2017 Data)

Due to the switch from Version 2.81 to 2.9 in July 2017

Audit selection pool included:

• active participants who have completed at least 30 CABG cases between January 1 and June 30, 2017

• v2.9 data is being audited in 2019
  ▪ STS built in a 6 month grace period so participants/data managers could become familiar with data field and definition changes in v2.9
  ▪ January 1 through December 31, 2018
External Audit Methodology

DCRI

Randomly selects 10% of participating sites for audit

20 isolated CABG

10 isolated valve

cases from 3 randomly selected months for comparison to hospital logs

CRS
External Audit Methodology

1. Contacts site with case lists
2. Sites upload medical records via secure FTP

CRS

- 12 CABG
- 20 Cases Total
- 8 Valve

Source medical records compared to submitted data
Additional Audit Steps

• Questionnaire used to gather information about the data collection and submission process at each site
• Attempt to identify **contributing factors** for data elements with **lower agreement rates**
• STS provides a feedback report to each site
• Auditors provided education regarding data specifications and FAQ clarifications
Audit Results
2018 Audit: Overall Agreement Rate (v2.81 -- 2017 data)

All variables, all cases & all sites 95.4%
Overall Agreement Rate: 2012 to 2018
Overall Agreement Rates by Category 2018

<table>
<thead>
<tr>
<th>Category</th>
<th>Agreement Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary Bypass Surgery</td>
<td>99.4%</td>
</tr>
<tr>
<td>Mechanical Cardiac Assist Devices</td>
<td>99.4%</td>
</tr>
<tr>
<td>Previous Interventions</td>
<td>99.0%</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>98.8%</td>
</tr>
<tr>
<td>Post Operative Events</td>
<td>98.6%</td>
</tr>
<tr>
<td>Valve Surgery</td>
<td>98.2%</td>
</tr>
<tr>
<td>Discharge</td>
<td>98.0%</td>
</tr>
<tr>
<td>Demographics</td>
<td>97.3%</td>
</tr>
<tr>
<td>Operative</td>
<td>96.5%</td>
</tr>
<tr>
<td>Preoperative Risk Factors</td>
<td>95.3%</td>
</tr>
<tr>
<td>Preoperative Medications</td>
<td>95.2%</td>
</tr>
<tr>
<td>Mortality</td>
<td>94.9%</td>
</tr>
<tr>
<td>Readmission</td>
<td>92.3%</td>
</tr>
<tr>
<td>Post Operative</td>
<td>92.2%</td>
</tr>
<tr>
<td>Preoperative Cardiac Status</td>
<td>92.0%</td>
</tr>
<tr>
<td>Hemodynamics/Cath/Echo</td>
<td>89.2%</td>
</tr>
</tbody>
</table>
Agreement Rates by **Category**
% change from 2017 to 2018
Agreement Rates: **Mortality** 2017 v 2018

- 69/100 sites had 100% accuracy
- **But...**
  - Outliers with <50% accuracy: “unable to verify status”
  - Did not keep track, or worse, did not check and simply marked “yes”
  - No site with low rates participated in the follow-up webinar

Mortality results .... A mixed picture
Agreement rates were excellent in key fields

...But the overall section rate was only 92% because of difficulties seen with:

- **Peak Glucose (73.6%)**
  - ? Confusing time frame (18-24 hrs) ?
- **Creatinine (89.3%)**

Peak glucose **REMOVED in 2020 Upgrade** (remains in the optional anesthesia section)
Individual Variable Agreement Rates: **Cardiac Status** 2018

- Resuscitation: 99.8%
- Cardiogenic Shock: 99.3%
- Prior Myocardial Infarction: 94.4%
- When: 93.6%
- Heart Failure within 2 weeks: 89.7%
- Classification NYHA: 89.1%
- Cardiac Symptom at time of this admission: 78.2%
Cardiac Status Agreement Rates
% change from 2017 to 2018

Mismatches occurred when:
- A site recorded “no” when the documentation showed “yes”, or vice versa.
- Common issue: no supporting evidence or no new symptoms two weeks prior to the admission.

Mismatches occurred when:
- Documentation supported a classification but no data was submitted
- Documentation supported a different class type.
## Individual Variable Agreement Rates: Risk Factors 2018

<table>
<thead>
<tr>
<th>Variable</th>
<th>Agreement Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious Endocarditis</td>
<td>99.8%</td>
</tr>
<tr>
<td>Infectious Endocarditis Type</td>
<td>99.5%</td>
</tr>
<tr>
<td>Dialysis</td>
<td>98.8%</td>
</tr>
<tr>
<td>Height</td>
<td>98.2%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>97.8%</td>
</tr>
<tr>
<td>Prior CVA</td>
<td>97.1%</td>
</tr>
<tr>
<td>Immunocompromise</td>
<td>96.8%</td>
</tr>
<tr>
<td>Weight</td>
<td>96.2%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>96.1%</td>
</tr>
<tr>
<td>Cerebrovascular Disease</td>
<td>96.1%</td>
</tr>
<tr>
<td>Liver Disease</td>
<td>95.9%</td>
</tr>
<tr>
<td>Peripheral Artery Disease</td>
<td>95.7%</td>
</tr>
<tr>
<td>Diabetes Control</td>
<td>95.1%</td>
</tr>
<tr>
<td>Five Meter Walk Test Done</td>
<td>92.9%</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>92.5%</td>
</tr>
<tr>
<td>INR</td>
<td>92.5%</td>
</tr>
<tr>
<td>Last Creatinine Level</td>
<td>92.5%</td>
</tr>
<tr>
<td>Total Bilirubin</td>
<td>91.4%</td>
</tr>
<tr>
<td>Chronic Lung Disease</td>
<td>86.9%</td>
</tr>
</tbody>
</table>
Risk Factor Agreement Rates
% change from 2017 to 2018
Variable Agreement Rates: Hemodynamics/Cath/Echo 2018

- Ejection Fraction Done: 97.5%
- Aortic Stenosis: 96.8%
- Tricuspid Stenosis: 95.9%
- Percent Stenosis - Left Main: 95.8%
- Aortic Valve Disease: 94.5%
- Mitral Stenosis: 93.4%
- Highest Mean Gradient: 92.3%
- Number of Diseased Vessels: 92.3%
- Tricuspid Valve Disease: 87.2%
- Mitral Valve Disease: 85.2%
- Mitral Insufficiency: 82.4%
- Aortic Insufficiency: 82.0%
- Tricuspid Insufficiency: 79.6%
- Ejection Fraction: 74.0%
Hemodynamics/Cath/Echo Agreement Rates
% change from 2017 to 2018

Mismatches occurred when:
• Value closest to surgery not submitted
• Mean value not used
Readmission

Agreement rate = 82.3%

• Mismatches occurred when sites recorded “No” and there was no readmission assessment found 30 days after the discharge date.
Common Themes
Where to look?

Data elements can be found in multiple locations in the medical record

- Written and electronic records
- History and physical
- Consultation notes / Operative notes
- Catheterization /ECHO reports
- Laboratory/pathology reports
- Anesthesia records
- Discharge summaries
Auditors typically review

- History and physicals
- Consultation notes
- Lab/Echo/Cath reports
- Anesthesia records
- Discharge summaries

BUT

- You are responsible for selecting those portions of the medical record that cover what the auditor must review
- If you do not provide it, they will not see it
"Hierarchy of truth"

The training manual provides guidance for some fields

In the absence of definitive direction:
• **Temporal relationship** to date of surgery
• Use a **consistent** method to abstract data in the record
• Look for **discrepancies** in what you are coding
• **Talk with your surgical team for clarification**
• **Submit** your question to STS for advice on coding
• **Discuss** your data sources with the auditor prior to audit
Refer to and review the **Training Manual** for the latest guidance on field definitions and coding advice.
We don’t have all the answers

• The training manual does not provide a solution for every scenario. These situations should be referred to the core group for adjudication.

• We use your input to continually revise the training manual to provide more specific coding guidance.

• The upcoming 2020 ACSD revision reflects what we have learned from prior iterations and from you. The number of data fields has been substantially reduced and field definitions clarified.

• Your dedicated work is critical in helping us keep the ACSD at the forefront of clinical data registries.
Thank you !!!