Regional Quality Groups in the SVS Patient Safety Organization

2012 Vascular Annual Meeting®
June 6, 2012
The Vascular Quality Initiative

Now and the Future

John (Jeb) Hallett, M.D., FACS
Clinical Professor of Surgery, MUSC
Roper St Francis Heart and Vascular Center
Charleston, South Carolina
Nothing to Disclose
Cardiovascular disease may be more a behavioral disorder than a pathologic process.
Two Problems in Medicine

Disordered Behavior
The leading cause of poor outcome in medicine worldwide is lack of patient compliance to recommended health care
The Hypothesis

Variation in practice is the enemy of quality.
We all know what we should be doing…..but simply do not
Rationale for Vascular Groups

Variation exists in vascular care
- 2-4 fold difference in mortality, morbidity
- 4-7 fold difference in procedure rates

Rate of Major Vascular Ops per 1000 Medicare Enrollees

- 1.30 to 1.67
- 1.10 to < 1.30
- 0.90 to < 1.10
- 0.75 to < 0.90
- 0.26 to < 0.75
- Not Populated
150 Academic Medical Centers
4000 Community Hospitals
A regional registry for quality assurance and improvement: The Vascular Study Group of Northern New England (VSGNNE)

Jack L. Cronenwett, MD, a Donald S. Likosky, PhD, b Margaret T. Russell, MBA, MS, a Jens Eldrup-Jorgensen, MD, c Andrew C. Stanley, MD, d and Brian W. Nolan, MD, a for the VSGNNE, Lebanon and Hanover, NH; Portland, Me; and Burlington, Vt
COMPARE Hospitals

- Patient satisfaction
- Compliance to standards of care
- Mortality and morbidity outcomes
- Comparative costs of care
What would it take to tip vascular surgery toward a national quality improvement initiative?
The Urgency for Change

• **Outcomes for MOC** *(Maintenance of Competence, American Board of Vascular Surgery)*

• **Quality Measures for CMS bonus**

• **Readmission penalties in the near future**
The Two “Game Changers”
Vascular Quality Initiative

• To collect and analyze data to identify areas for improvement in care

• Create regional vascular quality groups who would lead these changes

• Provide systems to benchmark care
Additional Benefits to PSO Members

- Meets CMS’ Carotid Artery Stent Facility Recertification requirements
- Meets quality improvement portion of Board Maintenance of Certification requirements
- Allows CMS-PQRS reporting for physicians without additional work of claims-based reporting
# CMS Physician Quality Reporting System

<table>
<thead>
<tr>
<th>Year</th>
<th>Bonus</th>
<th>Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>2.0%</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>1.5%</td>
<td></td>
</tr>
<tr>
<td>2012-2014</td>
<td>0.5%</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>1.5%</td>
<td>(Based on 2013 data)</td>
</tr>
<tr>
<td>2016 +</td>
<td>2.0%</td>
<td></td>
</tr>
</tbody>
</table>

% of all Medicare Part B claims

*Data submitted to M2S for SVS VQI can be submitted to CMS for PQRS reporting*
The Most Important Game Changer

*PSO=Patient Safety Organization*

The Patient Safety Act of 2009 created a system for reporting quality improvement data to a PSO:

- Eliminates the need for patient consent and IRB approval
- Protects comparative data from legal discovery
- Allows patient identifiers to be included
- But, only de-identified data can be released for analysis
The SVS Vascular Quality Initiative has a quality continuous improvement methodology…..but NSQIP does not.
The “game changers”

m2s Software Program
Vascular Quality Initiative®

About The VQI

Overview & Benefits
Value in Participation
Participating Centers & Physicians
Regional Quality Groups
Procedures Collected
Quality Reports
Data Entry Requirements
Cost Overview
FAQs

Resources

Quality Reports

Using the M2S cloud-based system, bar graphs that display a comparison of key outcomes and complication rates among centers and providers are available in real-time. These are not risk-adjusted, but are arranged in descending order to provide an estimate for each center and provider of their results in comparison to others in the region.

Additionally, key quality indicators that are tracked over time for each type of procedure are displayed in a 12 charts per page format in the registry system. Each chart shows the rate of events in each center compared with the region average. The variation across centers at each time point is displayed, showing the maximum and minimum values. Benchmark information regarding the use of important pre-operative medications, such as beta blockers, compares providers and hospitals over time and is also available in real-time through the database.

Semi-annually, quality reports for regional quality groups can be prepared by the SVS PSO and used for distribution at semi-annual meetings. These reports can be used as the basis for quality improvement discussions. Risk-adjusted comparisons of key outcomes for each procedure may also be generated from the data. Risk-adjusted benchmark reports compare the outcome at each hospital after controlling for different patient factors that can influence outcome, and show standard deviation estimates to ascertain significant variations.

For more information on the reports available to your center and regional group, contact us.

Dr. Black
State Vascular Society
The VQI “Manifest Destiny”
Vascular Quality Initiative

160 centers in 38 states and Ontario
> 2500 Procedures per Month
Strong Interest Continues!

On top of the 160 institutions currently participating, 100 institutions are in the contracting process.
Vascular Quality Initiative

7 Regional Groups Exist:
- Carolinas
- Florida
- New England
- New York City
- Southern California
- South
- Virginias

6 Regional Groups Forming:
- Georgia
- Illinois
- Mid-Atlantic
- Upstate New York
- Rocky Mountains
- Indiana
“Just-in-time” Strategic Change

Vascular Quality Initiative
What one region learns may be applicable to all regions.....

...and my lead to national guidelines for better care
So, just remember this....

- The “quality train” has left the station at full speed
- The SVS Quality Initiative is “ON BOARD”
- Regional vascular study groups will be the key to meaningful change
Current State of the Society for Vascular Surgery®
Vascular Quality Initiative®

Carrie Bosela
162 Centers, 39 States + Ontario
> 2500 Procedures per Month
**Total Procedures Captured (as of May 31, 2012)**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carotid Endarterectomy</td>
<td>15,295</td>
</tr>
<tr>
<td>Carotid Artery Stent</td>
<td>1,569</td>
</tr>
<tr>
<td>Endovascular AAA Repair</td>
<td>5,486</td>
</tr>
<tr>
<td>Open AAA Repair</td>
<td>2,938</td>
</tr>
<tr>
<td>Peripheral Vascular Intervention</td>
<td>13,661</td>
</tr>
<tr>
<td>Infra-Inguinal Bypass</td>
<td>8,334</td>
</tr>
<tr>
<td>Supra-Inguinal Bypass</td>
<td>1,988</td>
</tr>
<tr>
<td>Thoracic and Complex EVAR</td>
<td>401</td>
</tr>
<tr>
<td>Hemodialysis Access</td>
<td>1,053</td>
</tr>
</tbody>
</table>

**VQI Monthly Procedure Volume**
Formed Regional Groups:
- New England
- Carolinas
- Florida
- Southern California
- South (SOVONET)
- Virginias
- New York City
- Rocky Mountains

Forming Regional Groups:
- Illinois
- Mid-Atlantic
- Upstate New York
- Indiana
- Chesapeake Valley
- Northern California
- Michigan
- Missouri/Kansas/Iowa
Q3 2012 - Initial Release of VQI Analytics & Reporting Engine

• Features Available
  – Report Builder to:
    • Select variables of interest
    • Filter for desirable population
  – Analytics for Different Variable Types
  – Suppression Rules for Anonymity
  – Benchmark with All Other VQI Participants
  – Printer-friendly PDF Generator
  – CSV Export of Raw Data
Select Variables of Interest for Analysis

- Report Name: My New Tabular Report
- Procedure Type: Carotid Artery Stent

Select Variables:
- General
- Demographics
- History
- Procedure
- Post Op
  - Time of Onset Ipsilateral
  - Myocardial Infarction

Close
Add Filters to Narrow Down to Population of Interest
### Analytics & Reporting Engine

#### Report Name:
My New Tabular Report

#### Procedure Type:
Carotid Artery Stent

- **Gender**: Male
- **Diabetes**: None

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>My Results (N=69)</th>
<th>All VQI Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>100.0% (69)</td>
<td>100.0% (187)</td>
</tr>
<tr>
<td>Female</td>
<td>0% (0)</td>
<td>0% (0)</td>
</tr>
<tr>
<td>Missing Value</td>
<td>0% (0)</td>
<td>0% (0)</td>
</tr>
<tr>
<td>Weight (lbs)</td>
<td>135.2 ± 67.4 (18.0 - 238.0)</td>
<td>132.8 ± 72.5 (18.0 - 273.0)</td>
</tr>
<tr>
<td>Smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>20.3% (14)</td>
<td>14.4% (27)</td>
</tr>
<tr>
<td>Prior (&gt;1y)</td>
<td>40.6% (28)</td>
<td>47.6% (39)</td>
</tr>
<tr>
<td>Current (within y)</td>
<td>39.1% (27)</td>
<td>37.4% (70)</td>
</tr>
<tr>
<td>Missing Value</td>
<td>0% (0)</td>
<td>0.5% (1)</td>
</tr>
<tr>
<td>Creatinine (mg/dl)</td>
<td>1.5 ± 0.6 (0.6 - 14.0)</td>
<td>1.4 ± 1.8 (0.58 - 14.0)</td>
</tr>
<tr>
<td>Urgency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>95.5% (59)</td>
<td>88.9% (199)</td>
</tr>
<tr>
<td>Urgent</td>
<td>13.0% (8)</td>
<td>10.2% (19)</td>
</tr>
<tr>
<td>Emergent</td>
<td>1.4% (1)</td>
<td>1.1% (2)</td>
</tr>
</tbody>
</table>

*Note: Data values are approximate.*
• Download Tabular Report into Nicely-formatted and Printer-friendly PDF File
New Projects for 2012/2013

- Provider billing (CPT) codes for auditing
- Working with EMR vendors to incorporate data elements into process of care
- Working with FDA and industry to use VQI data for post-approval device studies
- Provide mechanism for regional groups to use VQI clinical data for efficient research trials
- Develop a mechanism to link Medicare claims data with PSO data to capture events and outcomes > 1 yr
- Collaboration with other registries
How to Organize a Regional Quality Group

KAREN WOO MD
Disclosures

• None
Initial Steps

- Identify interested participants
- Phone or email conversations
- Conference call
- Introductory meeting
Regional Vascular Societies

- Use the structure of an existing regional vascular society
  - Southern California Vascular Outcomes Improvement Collaborative (So Cal VOICe)
    - Southern California Vascular Surgery Society
  - Florida Vascular Study Group (FVSG)
    - Florida Vascular Society
    - South Florida Society for Vascular Surgery
Regional Vascular Societies

• Regional Society Meeting
  • Informal lunch discussion
  • Q & A session

• Carolinas Vascular Study Group
  • Meetings separate from Southern Association of Vascular Surgery
  • Keep focus on quality improvement effort
Regional Vascular Societies

- Collaborative effort
- Vascular Study Group of New England (VSGNE)
  - New England Society of Vascular Surgery
  - No organizational or structural purposes
  - Collaborates on potential clinical trials
Regional Group Size

- 3 institutions required to form a VQI-accredited group
  - Minimum number for anonymous institutional benchmarking
- Convenience of geography for semi-annual meeting
- Meaningful participation of all members
Regional Group Size

• Southern Vascular Outcomes Network (SOVONET)
  • Relative paucity of vascular surgeons
  • Linked southern states over a multi-state area
  • Will meet online
Financial Considerations

• External Cost
  • Web-based data services from M2S
  • PSO services from SVS

• Cost of data entry
  • Embed data entry into everyday workflow
  • Designated data entry personnel
Contracting

- Initial organizational meetings
  - Representative from M2S and VQI
  - Contracting process
  - Cost of involvement
- Funding secured
  - Contracts and business associate agreements with M2S
  - Contracts with SVS PSO
  - Requires more time than expected
Initial Meeting

• Bylaws required by SVS PSO
  • Template available
  • Review and approve bylaws
  • Approval by Governing Council for formal accreditation
Initial Meeting

• Funding, data entry, workflow
• Quality improvement projects
• Research projects
• Several years of data collection required
• Focus on quality measures
  • Reduction in variation in processes of care
Regional Group Meetings

• All current groups hold semi-annual meetings
• Timing varies
• So Cal VOICe & Florida VSG
  • One meeting in conjunction with annual meeting of regional society
  • Other meeting rotated to participating institutions
Regional Group Meetings

- Virginia Vascular Study Group
  - Alternate between Virginia Vascular Society and West Virginia Vascular meeting
  - Fall and spring
Administrative Structure

- Regional Medical Director
- Some portion of Project Manager
  - Same center as Medical Director
  - Administrative tasks
  - Initial tasks small
  - Can grow with more data and quality improvement projects
Administrative Structure

- Future statistical services
  - Purchase
  - Academic centers with statistical resources
- Fiscal agent
  - Institution/ foundation
  - So Cal VOICe uses SCVSS
  - Receive regional fees from participating centers
  - Pay authorized expenses
Administrative Structure

• Executive Committee required
  • Medical Director
  • One representative from each participating institution
  • Conducts the business
  • Makes all decisions
  • Oversight of budgets, contracts, publications, relationships with outside parties and requests for membership
Administrative Structure

• Quality Committee
  • Chair and interested members
  • Oversee quality improvement efforts
    • Develop specific quality improvement projects
    • Organize quality presentation at semiannual meeting
    • Develop practice guidelines
    • Revise data collection forms and reports
    • Review regional data to identify areas for quality improvement
Administrative Structure

- Research Advisory Committee (RAC)
  - Chair
  - Members who have interest and expertise
  - Facilitates conduct of regional quality improvement research
  - Review research proposals that request non-identifiable regional datasets
Administrative Structure

- Research Advisory Committee (RAC)
  - Works with researchers
    - Novel
    - Central to group mission
    - Appropriate analytic plan
    - Correctly interpreted
    - Properly presented and published

- RAC may be combined with Quality Committee or both with Executive Committee
Non-Identifiable Datasets

- Prepared by SVS PSO
- May only be requested by SVS PSO members who are members of a regional quality group
- Mechanism for review and approval
  - Specified by each group
Regional Datasets

- Request approved by region
- Region sends request to PSO
- PSO requests permission from each regional practice entity
Multi-Region Datasets

- Request approved by region
- Reviewed by PSO Quality Committee
  - Representative from each regional group
  - Negotiates recommended changes
  - Approves project
Multi-Region Datasets

• Each regional group gives approval
  • Each group will have one or more members on investigation team
• PSO requests permission from each practice entity
• PSO prepares dataset
Regional Quality Groups

• Customize structure to needs of each group
• Use experience of existing groups
Benefits of a Regional Quality Group

Jens Eldrup-Jorgensen, MD, FACS

Chief, Division of Vascular Surgery, Maine Medical Center
Professor of Surgery, Tufts University School of Medicine
Director, Vascular Center at Maine Medical Center
VSGNE
Academics

- 130 surgeons in 30 hospitals
- Over 25,000 patients in registry since 2003
- 16 publications in peer reviewed journals
- 25 presentations at national and regional societies
- 9 papers presented at VAM
**PUBLICATIONS**


Presentations

Presentations


Database

- QA, QI
- Outcomes evaluation – Surgeon Division
- PQRI
- MOC
Registry in Practice

VSGNE

Database

- State of the art
- Standardized reporting
- User-friendly
- Short
- IS supported
Registry in Practice

VSGNE Database

- Carotid endarterectomy
- Open AAA repair
- EVAR
- Lower extremity bypass
- PVI
- Others
Primary Carotid Endarterectomy
Region = 9142 (blue) Center = 2161 (red)
January 1, 2003 – December 31, 2011

Notes

**Beta Blockers:** 90% benchmark (dashed line) established Nov. 2003. B-blocker working group presentations May 2004.

**Use of Aspirin or Plavix:** 95% benchmark (dashed line) established Nov. 2006.

**Post-Op Complications:** Any TIA, reperfusion symptoms, MI, new dysrhythmia, CHF, wound infection or return to OR.
This patient safety work product generated within the SVS PSO, LLC, is considered privileged and confidential according to the provisions of 42 CFR Part 3.
January 1, 2003 – December 31, 2011

Primary CEA - Any Stroke or Death Rate by Center

Arranged by Descending Stroke/Death Rate (n=9142)

This patient safety work product generated within the SVS PSO, LLC, is considered privileged and confidential according to the provisions of 42 CFR Part 3.
January 1, 2003 – December 31, 2011

Infra-Iguinal Bypass - Death or Major Amputation Rate by Physician
Arranged by Descending Death/Major Amputation Rate (n=4182)

This patient safety work product generated within the SVS PSC, LLC, is considered privileged and confidential according to the provisions of 42 CFR Part 3.
Percentage of Patients with Length of Stay >1 Day after Elective Carotid Endarterectomy: Observed and Expected by Center

8,112 CEAs, 2003 thru 2011 (Excludes in-hospital deaths)

In 11 centers the observed % of patients with LOS > 1 day was significantly lower or higher than expected (*)

Overall LOS > 1 day = 23%  
AUC = 0.611

adjusted for: age, gender, prior stroke, nursing home, prior vascular procedure, diabetes, creatinine, CHF, CAD

This patient safety work product generated within the SVS PSC, LLC, is considered privileged and confidential according to the provisions of 42 CFR Part 3.
Stroke or Death Rate after Elective CEA: Observed and Expected by Medical Center

8112 procedures (excluded combined CABG), 2003 thru 2011
(Centers with 25 or more procedures)

observed  expected

No center had a significantly higher or lower stroke or death rate

Overall stroke or death rate = 0.9%
AUC = 0.679

adjusted for: age, degree of contralateral stenosis, preoperative neurologic symptoms

Medical Center

This patient safety work product generated within the SVS PSO, LLC, is considered privileged and confidential according to the provisions of 42 CFR Part 2.
In-hospital Mortality Rate after Non-Ruptured Open AAA Repair:
Observed and Expected by Center

1,690 oAAAs, 2003 thru 2011
(Centers with 25 or more procedures)

- observed
- expected

1 center had an observed mortality rate significantly higher than expected (*).

Overall mortality rate = 2.7%
AUC = 0.7471

adjusted for: COPD, creatinine, history of bypass, site of proximal clamp

Medical Center
Long Term Follow-Up
For Procedures from January 2003 through December 2008

Percent of Long-Term Follow-up Completed

Percentage Completed

Region

*For VSGNE Meeting May 12, 2010
Confidential – For Quality Assurance Only
Pre-op Medication Usage

- Beta-blockers
- ASA-Clopidogrel
- Statins
Pre-op Beta-Blocker Usage by Surgeon, Jan-June 2003

10% at Target of 90% Usage

Initial Surgeon Variation: 39% - 100%
Pre-op B-Blocker Usage by Surgeon, July-Dec 2007

60% at Target of 90% Usage

Most Recent Surgeon Variation: 45% - 100%
Division Outcomes:

1. Complication rates – stroke, cardiac, thrombosis, return to OR, etc
2. LOS, charges
3. Quality metrics – Beta blockers, ASA, statin
# Vascular Surgery Best Practices Scorecard

## Procedure:
Carotid Endarterectomy

### Post-Operative Outcomes/ Complications

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Attendees</th>
<th>AMIM YTD/all surgeons</th>
</tr>
</thead>
<tbody>
<tr>
<td>% cases</td>
<td>in (total)</td>
<td>in (total)</td>
</tr>
<tr>
<td><strong>Case Data:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of cases reviewed</td>
<td>93</td>
<td>245</td>
</tr>
<tr>
<td>Mean Post-Op Length of Stay</td>
<td>1.2</td>
<td>1.0</td>
</tr>
<tr>
<td>Median Post-Op Length of Stay</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Mean Hospital Length of Stay</td>
<td>1.4</td>
<td>2.0</td>
</tr>
<tr>
<td>Mean Total Hospital Charges</td>
<td>$ 12,665</td>
<td>$ 13,177</td>
</tr>
<tr>
<td><strong>Cranial Nerve Injury:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VII</td>
<td>6.0% (5/93)</td>
<td>4.5% (11/245)</td>
</tr>
<tr>
<td>IX</td>
<td>1.2% (1/93)</td>
<td>1.6% (4/245)</td>
</tr>
<tr>
<td>X</td>
<td>0.3% (3/93)</td>
<td>2.5% (7/245)</td>
</tr>
<tr>
<td>XII</td>
<td>10.8% (10/93)</td>
<td>9.3% (20/245)</td>
</tr>
<tr>
<td>Other</td>
<td>0.0% (0/93)</td>
<td>0.4% (1/245)</td>
</tr>
<tr>
<td><strong>Neurologic events:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ipsilateral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIA</td>
<td>1.2% (1/93)</td>
<td>1.2% (3/245)</td>
</tr>
<tr>
<td>Minor stroke</td>
<td>0.0% (0/93)</td>
<td>0.8% (0/245)</td>
</tr>
<tr>
<td>Major stroke</td>
<td>0.0% (0/93)</td>
<td>0.6% (0/245)</td>
</tr>
<tr>
<td>Contralateral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIA</td>
<td>1.2% (1/93)</td>
<td>0.4% (1/245)</td>
</tr>
<tr>
<td>Minor stroke</td>
<td>0.0% (0/93)</td>
<td>0.6% (0/245)</td>
</tr>
<tr>
<td>Major stroke</td>
<td>0.0% (0/93)</td>
<td>0.6% (0/245)</td>
</tr>
<tr>
<td><strong>Other events:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reperfusion symptoms - Seizure or hemorrhage</td>
<td>0.0% (0/93)</td>
<td>0.4% (1/245)</td>
</tr>
<tr>
<td>IV med required for Hypertension</td>
<td>10.8% (10/93)</td>
<td>12.3% (31/245)</td>
</tr>
<tr>
<td>IV med required for Hypertension</td>
<td>5.8% (6/93)</td>
<td>7.8% (19/245)</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>1.2% (1/93)</td>
<td>0.4% (1/245)</td>
</tr>
<tr>
<td>Dysrhythmia (new)</td>
<td>0.0% (0/93)</td>
<td>2.6% (5/245)</td>
</tr>
<tr>
<td>CIVH</td>
<td>0.0% (0/93)</td>
<td>0.4% (1/245)</td>
</tr>
<tr>
<td>Wound Infection</td>
<td>0.0% (0/93)</td>
<td>0.6% (0/245)</td>
</tr>
<tr>
<td>Return to OR for Bleeding</td>
<td>1.2% (1/93)</td>
<td>1.6% (4/245)</td>
</tr>
<tr>
<td>Return to OR for Neurologic event</td>
<td>1.2% (1/93)</td>
<td>0.8% (2/245)</td>
</tr>
<tr>
<td><strong>Discharge medications:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASA</td>
<td>89% (74/93)</td>
<td>89% (218/245)</td>
</tr>
<tr>
<td>Plavix</td>
<td>6.4% (7/93)</td>
<td>10.2% (25/245)</td>
</tr>
<tr>
<td>Other antiplatelet</td>
<td>9.6% (9/93)</td>
<td>9.4% (22/245)</td>
</tr>
<tr>
<td>Statin</td>
<td>91% (87/93)</td>
<td>95% (210/215)</td>
</tr>
<tr>
<td>Beta blockers</td>
<td>93% (87/93)</td>
<td>97% (212/215)</td>
</tr>
<tr>
<td><strong>Discharge destination:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home</td>
<td>98% (91/93)</td>
<td>98% (238/245)</td>
</tr>
<tr>
<td>Rehab facility</td>
<td>2.4% (2/93)</td>
<td>3.2% (8/245)</td>
</tr>
<tr>
<td>Skilled nursing facility</td>
<td>0.0% (0/93)</td>
<td>0.8% (2/245)</td>
</tr>
<tr>
<td>Expired</td>
<td>0.0% (0/93)</td>
<td>0.6% (0/245)</td>
</tr>
</tbody>
</table>
### Vascular Surgery Best Practices Scorecard

**PROCEDURE:** Lower Extremity Bypass  
**REPORT FOR ATTENDING:** 3319  
**Date of surgery from:** Jan-08  
**to:** Dec-08

<table>
<thead>
<tr>
<th>Post-Operative Outcomes/Complications</th>
<th>Your results</th>
<th>MMC YTD</th>
<th>All surgeons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% cases (n</td>
<td>total)</td>
<td>% cases (n</td>
</tr>
<tr>
<td>Case Data:</td>
<td>23</td>
<td>122</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Mean Post-Op Length of Stay:</td>
<td>8.6</td>
<td>6.6</td>
<td>23</td>
</tr>
<tr>
<td>Mean Hospital Length of Stay:</td>
<td>11.3</td>
<td>7.7</td>
<td>23</td>
</tr>
<tr>
<td>Mean Total Hospital Charges:</td>
<td>$ 40,861</td>
<td>$ 57,042</td>
<td>23</td>
</tr>
<tr>
<td>Wound infection:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Post-op Bleeding:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.8% ( 1</td>
</tr>
<tr>
<td>Percent requiring 1-2 units:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Percent requiring &gt;=3 units:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Percent requiring return to OR:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Myocardial infarction:</td>
<td>4.3% ( 1</td>
<td>23 )</td>
<td>4.1% ( 5</td>
</tr>
<tr>
<td>Dysrhythmia (new):</td>
<td>0.7% ( 2</td>
<td>23 )</td>
<td>0.0% ( 5</td>
</tr>
<tr>
<td>CHF:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>2.5% ( 3</td>
</tr>
<tr>
<td>Respiratory complications:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Pneumonia:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Required ventilator post-op:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>1.8% ( 2</td>
</tr>
<tr>
<td>Change in renal function:</td>
<td>15.0% ( 3</td>
<td>20 )</td>
<td>8.4% ( 9</td>
</tr>
<tr>
<td>Increase in creatinine &gt;0.5 mg/dl:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Return to OR for:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Infection:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Thrombosis:</td>
<td>4.3% ( 1</td>
<td>23 )</td>
<td>2.5% ( 3</td>
</tr>
<tr>
<td>Revision:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.8% ( 1</td>
</tr>
<tr>
<td>Ipsilateral amputation:</td>
<td>4.3% ( 1</td>
<td>23 )</td>
<td>7.4% ( 0</td>
</tr>
<tr>
<td>Minor:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>BK amputation:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>2.8% ( 3</td>
</tr>
<tr>
<td>AK amputation:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Discharge patency:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>25.0% (117</td>
</tr>
<tr>
<td>Primary:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Primary - assisted:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Secondary:</td>
<td>4.3% ( 1</td>
<td>23 )</td>
<td>2.5% ( 3</td>
</tr>
<tr>
<td>Ocluded:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>1.0% ( 2</td>
</tr>
<tr>
<td>Patency judged by:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>50.0% (58</td>
</tr>
<tr>
<td>Palpable graft pulse:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>1.8% ( 2</td>
</tr>
<tr>
<td>Palpable distal pulse:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.9% ( 1</td>
</tr>
<tr>
<td>ABI increase &gt;0.15:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>6.3% ( 3</td>
</tr>
<tr>
<td>Duplex:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Discharge medications:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>79% ( 93</td>
</tr>
<tr>
<td>ASA:</td>
<td>83% ( 10</td>
<td>23 )</td>
<td>19.6% ( 32</td>
</tr>
<tr>
<td>Plavix:</td>
<td>28.1% ( 6</td>
<td>23 )</td>
<td>19.6% ( 32</td>
</tr>
<tr>
<td>Sitrin:</td>
<td>79% ( 10</td>
<td>23 )</td>
<td>80% ( 95</td>
</tr>
<tr>
<td>Beta blockers:</td>
<td>100% ( 23</td>
<td>23 )</td>
<td>91% (108</td>
</tr>
<tr>
<td>Discharge ambulation:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Ambulatory:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Ambulatory with assistance:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Wheelchair:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Bedridden:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Discharge destination:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>2.5% ( 3</td>
</tr>
<tr>
<td>Home:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>68% ( 81</td>
</tr>
<tr>
<td>Rehab facility:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>24.0% ( 30</td>
</tr>
<tr>
<td>Skilled nursing facility:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
<tr>
<td>Expired:</td>
<td>0.0% ( 0</td>
<td>23 )</td>
<td>0.0% ( 0</td>
</tr>
</tbody>
</table>

**Percent previous year followed up in study period:** Within 10-14 months of index surgery.
Outcomes analysis:

Independent recording

Ongoing evaluation
CEA pathway

- 85% transfer to regular floor care (bypassing Intermediate and Critical Care)
- 85% discharged on POD #1
The 2008 American College of Surgeons – National Surgical Quality Improvement Program mean post op LOS benchmark is 6.9 days.
The Surgical Care Improvement Project (SCIP)

Measures being tracked include:
1. Appropriate pre-op timing of antibiotic administration
2. Appropriate choice of drug for procedure
3. Antibiotic discontinued 24 hours after surgery
4. Bundle including cases meeting all SCIP criteria

% of cases meeting ALL SCIP criteria:

- Endo AAA (ruptured cases excluded) 97%
- Carotid Endarterectomy 99%
- Open AAA (ruptured cases excluded) 97%
- Infrainguinal Bypass 98%
- Ruptured AAA 100%
- Suprainguinal Bypass 98%
Physician Quality Reporting System:
Incentive payment for submission of quality measures data

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>2%</td>
</tr>
<tr>
<td>2011</td>
<td>1.5%</td>
</tr>
<tr>
<td>2012-4</td>
<td>0.5%</td>
</tr>
<tr>
<td>2015</td>
<td>- 1.5%</td>
</tr>
<tr>
<td>2016</td>
<td>- 2%</td>
</tr>
</tbody>
</table>
PQRS

Quality measures

Timing of antibiotic administration
Selection of antibiotic
Discontinuation of antibiotic w/i 24 hrs
Use of patch during CEA
PQRS
Reporting options

- Claims-based methods
- Registry-based methods

Must include 80% of all at risk cases
PQRS
Qualify for bonus

- Two of 7 general surgeons
- One of 5 vascular surgeons
PQRS
Qualify for bonus

- Five of 5 vascular surgeons using VSG
- $6-$8000 per surgeon
ABS - MOC

Maintenance of Certification Part 4.

Participation in a national, regional or local surgical outcomes database or quality assessment program.
ABS - MOC

Recertification

VSGNNE is an ABS approved registry
VSGNNE registry

- QA, QI
- Outcomes evaluation – Provider Division
- PQRS
- MOC
Research using SVS PSO Non-Identifiable Data

160 Centers, 38 States + Ontario
> 2500 Procedures per Month

Andres Schanzer, MD
UMass Medical School
Using SVS PSO Data

• VSGNE experience
  – Concept to Publication

• National VQI experience
  – Concept to Publication
9 VSGNE Presentations at VAM

PVSS16. Perioperative Use of Dextran is Associated with Cardiac Complications After Carotid Endarterectomy - Alik Farber

PVSS14. Gender Differences in Aortic Aneurysm Presentation, Repair and Mortality in the VSGNE - Ruby C. Lo

PS58. Gender Differences in Presentation of Patients Undergoing CEA and CAS in VSGNE - Rodney P. Bensley

PS96. Routine Compared to Selective Use of Completion Imaging After Infracuinal Lower Extremity Bypass is Not Associated with Higher Bypass Graft Patency - Tze-Woei Tan

PS118. Extent of COPD is Associated with Short- and Long-term Adverse Outcomes in Patients Undergoing Elective AAA Repair - David H. Stone

SS26. Improving Patient Selection for Carotid Endarterectomy in Asymptomatic Patients Based on Predicted 5-year Survival - Jessica Wallaert

RR2. The Influence of Gender on Functional Outcomes of Lower Extremity Bypass - Reshma B. Patel

RR13. Statin Therapy After Infracuinal Bypass Surgery for Critical Limb Ischemia is Associated with Improved Five-year Survival - Bjoern Suckow

RR17. Optimal Selection of Patients for Elective Abdominal Aortic Aneurysm Repair Based on Life Expectancy - Randall R. De Martino
The Process

1. Idea
<table>
<thead>
<tr>
<th>Exposure Variables</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgeon</td>
<td></td>
</tr>
<tr>
<td>Discharge Date</td>
<td></td>
</tr>
<tr>
<td>Transferred from another hospital?</td>
<td>Yes</td>
</tr>
<tr>
<td>Discharge Status</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Female; Male</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>1: Hispanic or Latino; 2: not Hispanic or Latino</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>Pre-Op Data</td>
<td></td>
</tr>
<tr>
<td>Smoking</td>
<td></td>
</tr>
<tr>
<td>HTN</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
</tr>
<tr>
<td>Beta Blockers</td>
<td></td>
</tr>
<tr>
<td>CAD Symptoms</td>
<td></td>
</tr>
<tr>
<td>CABG/PTCA</td>
<td></td>
</tr>
<tr>
<td>CHF</td>
<td></td>
</tr>
<tr>
<td>COPD</td>
<td></td>
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<tr>
<td>Dialysis</td>
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<tr>
<td>Creatinine</td>
<td></td>
</tr>
<tr>
<td>Stress Test</td>
<td></td>
</tr>
<tr>
<td>Pre-adm Living</td>
<td></td>
</tr>
<tr>
<td>Previous Arterial</td>
<td></td>
</tr>
<tr>
<td>By-pass</td>
<td></td>
</tr>
<tr>
<td>CEA</td>
<td></td>
</tr>
<tr>
<td>Amput Repair</td>
<td></td>
</tr>
<tr>
<td>PTA/PTQ</td>
<td></td>
</tr>
<tr>
<td>Major Amp</td>
<td></td>
</tr>
<tr>
<td>ASA Class</td>
<td></td>
</tr>
<tr>
<td>Symptoms</td>
<td></td>
</tr>
<tr>
<td>Couler psslat</td>
<td></td>
</tr>
<tr>
<td>Couler Cortical</td>
<td></td>
</tr>
<tr>
<td>Cortical Cortical</td>
<td></td>
</tr>
<tr>
<td>Vascularisism</td>
<td></td>
</tr>
<tr>
<td>Non-specific</td>
<td></td>
</tr>
<tr>
<td>Isolated stroke on CTA/MRA?</td>
<td>No</td>
</tr>
<tr>
<td>Previous Ipsilateral CEA</td>
<td></td>
</tr>
<tr>
<td>Previous Contralateral CEA</td>
<td></td>
</tr>
<tr>
<td>Previous radiation</td>
<td></td>
</tr>
<tr>
<td>Pre-op CTA</td>
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<tr>
<td>Pre-op Arterogram</td>
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<tr>
<td>Pre-op MRA</td>
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<tr>
<td>ICA Stenosis</td>
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<tr>
<td>Proximal Endovascular</td>
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<tr>
<td>Other Arterial op</td>
<td></td>
</tr>
<tr>
<td>Post-op Data</td>
<td></td>
</tr>
<tr>
<td>Cranial Nerve Injury</td>
<td></td>
</tr>
<tr>
<td>IX ASA</td>
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<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Isolated neurologic event</td>
<td></td>
</tr>
<tr>
<td>Time of Onset</td>
<td></td>
</tr>
<tr>
<td>Normal neurologic event</td>
<td></td>
</tr>
<tr>
<td>Time of Onset</td>
<td></td>
</tr>
<tr>
<td>Reposition symptoms</td>
<td></td>
</tr>
<tr>
<td>IV med required for hypertension</td>
<td>No</td>
</tr>
<tr>
<td>IV med required for hypotension?</td>
<td>No</td>
</tr>
<tr>
<td>Discharge Medications</td>
<td></td>
</tr>
<tr>
<td>ASA</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Fluoroscopy</td>
<td></td>
</tr>
<tr>
<td>Other antibiotic ordered</td>
<td></td>
</tr>
<tr>
<td>Pre-op Antibiotic ORDERED</td>
<td></td>
</tr>
<tr>
<td>Start post-op</td>
<td></td>
</tr>
<tr>
<td>Stop post-op</td>
<td></td>
</tr>
<tr>
<td>1st-2nd Gen Cephal</td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td></td>
</tr>
<tr>
<td>Awake</td>
<td></td>
</tr>
<tr>
<td>Stump pressure</td>
<td></td>
</tr>
<tr>
<td>Confidnti - OA use only</td>
<td></td>
</tr>
</tbody>
</table>

*Note: The table above represents a sample of data for a medical record, focusing on exposure variables. The actual content may vary depending on the specific medical record being referenced.*
In-Hospital One Year
The Process

1. Idea

2. Review previously performed/ongoing analyses
The Process-VSGNE

1. Idea
2. Review previously performed/ongoing analyses
3. Submit proposal to the Research Advisory Committee
Request to VSGNE Research Advisory Committee for Non-Identifiable Dataset
Send to VSGNE@m2s.com

Name of Requesting Investigator:
Email Address:
Project Name:
Date of Request:

Context and Research Question (4-5 sentence summary that will be distributed to each center for approval):

Non-identifiable dataset(s) being requested (includes follow up data):

☐ Carotid Endarterectomy
☐ Carotid Artery Stent
☐ Open AAA Repair
☐ Endovascular AAA
☐ TEVAR/Complex EVAR
☐ Suprainguinal Bypass
☐ Infringuinal Bypass
☐ Peripheral Vascular Intervention
☐ Hemodialysis Access

Year(s) for which data are requested:

Blinded center-specific data needed: No ☐ Yes ☐ if yes, explain how/why this will be analyzed:

Blinded surgeon-specific data needed: No ☐ Yes ☐ if yes, explain how/why this will be analyzed:

Inclusion/exclusion criteria: (list variables to be used. e.g., age<80 years)

Exposure variable(s): (e.g., asymptomatic carotid stenosis)

Outcome variable(s): (e.g., in-hospital stroke after CEA)

Mock Tables: These tables will help the RAC evaluate your research plan. Please include, for instance, the key patient characteristics (in rows) by your primary exposure (in columns), e.g. the usual Table 1 in a manuscript. Please also include a table displaying your main outcome measures (in rows) by your primary exposure variable (in columns).
This Data Use Agreement (the “Agreement”) is made this _____ day of _____, 2012 by and between Society for Vascular Surgery Patient Safety Organization (“SVS PSO”) and Dr. ______________ (“Recipient”).

SVS PSO will provide a non-identifiable data set for project ____________________” (The Project) to Recipient on the condition that Recipient agrees to the following by signing this form:

1. The Recipient shall not use or further disclose the data set other than as required to complete The Project.

2. The Recipient shall allow access to the data only to individuals directly accountable to the Recipient.

3. The Recipient shall use appropriate safeguards to prevent use or disclosure of the data set other than as permitted by this Agreement.

4. Upon completion of the project, or should this Agreement be terminated for any reason, including, but not limited to Recipient’s decision to cease use of the data, Recipient agrees to destroy or return all data provided pursuant to this Agreement. SVS PSO will maintain a copy of each data set indefinitely for future reference by the Recipient.

**SVS PSO**

Name (print): __Carrie Bosela____________

Title: SVS PSO Administrative Director

Signature: __________________________

Date: ______________

**Recipient**

Name (print): ______________

Medical Center: ______________

Address: ______________

__________________________

Phone: ______________

Email: ______________

Signature: ______________

Date: ______________
Submission and Review Process

• RAC Committee Members:
  – Andy Schanzer; Brian Nolan; Daniel Bertges; Donny Likosky; Jack L. Cronenwett; Jeff Indes; Jeff Kalish; Ken Danielson; Marc Schermerhorn; Mark Conrad; Philip Goodney; Virendra Patel; Will Robinson; Yuanyuan Zhao

• Each project
  – Discussed
  – Assigned a “RAC Mentor”
  – Scored (1=Reject, 2=Revise, 3=Accept)
RAC Review Outcome

1 (Reject)
Exposure Variables
Not Present
Project Not Novel

RAC Mentor
Communication
and Suggestions to Investigator

2 (Revise)
More Detail Needed
Study Elements Need Clarity

3 (Accept)
Proposal Sent to EC
EC approval requested
Dataset released to Investigator

Multicenter Participation requested
RAC Review Outcome

RAC Review

2 (Revise)

More Detail Needed

Study Elements Need Clarity

RAC Mentor Communication and Suggestions to Investigator

Proposal Sent to EC

EC approval requested

Dataset released to Investigator

Multicenter Participation requested
RAC Review Outcome

RAC Review

3 (Accept)
Proposal Sent to EC

EC approval requested

Multicenter Participation requested

Dataset released to Investigator
RAC Review Outcome

RAC Review

Last 12 Months:
27 proposals reviewed
18 proposals approved
The Process - VSGNE

1. Idea
2. Review previously performed/ongoing analyses
3. Submit proposal to the Research Advisory Committee
4. Proposal circulated to the VSGNE Executive Committee
Alik Farber and Jeff Kalish at Boston Medical Center/BU School of Medicine (new members of the VSGNE) have submitted two requests for use of data from the VSGNE registry. The first is on the significance of intra-operative completion studies following lower extremity bypass. The second is to look at wound infection risk following lower extremity bypass. Two short proposals are attached for your review.

Please provide your consent/non-consent by marking (X) your choice below for each of the two requests:

(1) Intra-operative completion studies following LEB:

_____ Yes, I agree to use of the VSG registry to look at intra-operative completion studies following LEB.

_____ No, I do not agree to the use of the VSG registry for this specific project.

(2) Wound infection risk after LEB:

_____ Yes, I agree to use of the VSG registry to look at wound infection risk after LEB.

• Approval for use of center’s data
• Interested co-investigators
The Process - VSGNE

1. Idea
2. Review previously performed/ongoing analyses
3. Submit proposal to the Research Advisory Committee
4. Proposal circulated to the VSGNE Executive Committee
5. Investigator establishes research team to implement the study
Implementation

• Lots of work
• Lots of emails
• Lots of conference calls
• Presentation at the VSGNE regional meeting
• Submission to regional/national meeting
• Publication

22 Publications in Peer-Reviewed Journals (20 in JVS)


Using SVS PSO Data

• National VQI experience
  – Concept to Publication
Tremendous Potential

Number of Participating Centers

160 Centers, 38 States + Ontario
> 2500 Procedures per Month
The Process-VQI

1. Regional review and approval of the proposal
2. Submission of proposal to the VQI Quality Committee (will act analogous to RAC)
3. Reject, Revise, Accept
4. Proposal circulation to all sites for permission to use data
5. Dataset release to the investigator
Intent:
Agile while ensuring that the data are used rigorously and collaboratively to contribute meaningfully to quality improvement research in vascular surgery
EMR and Claims Linkage Using Registry Data

Philip Goodney, MD, MS
Goals

• Getting the most out of registries and claims.

• Linked clinical-claims datasets:
  – who’s done it, and how we can do it too.

• Future directions
Goals

• Getting the most out of registries and claims.

• Linked clinical-claims datasets:
  – who’s done it, and how we can do it too.

• Future directions
Advantages of Registries

- Clinical detail
- Specialty-developed and derived
- Agile, modifiable
Disadvantages of Registries

- “Hey, let’s add that variable”

- “Dr. X, Mr. Jones didn’t show up for his follow-up appointment”
Disadvantages of Registries

• “Who’s going to enter all of this VQI data?”

• Who’s going to pay for it?
Advantages of Claims

• Generalizable

• Electronic, searchable, automated

• Relatively inexpensive
  – (compared to FTE costs of registries)
Getting the best of both worlds…
Getting the best of both worlds...

**Ascertainment of patient population**
- **Registry**
  - Processing of claims is a prerequisite for payment.
  - Medicare is the largest payer in the US, especially for those over 65 years of age.
- **Claims**

**Risk Stratification**
- **Registry**
  - Uses operational definitions to capture patient disease conditions.
  - Used for developing risk prediction models based on specific disease states for specific procedures.
  - Designed by clinicians to evaluate their practices.
- **Claims**

**Longitudinal Follow-up**
- **Registry**
  - Able to capture all services reimbursed through Medicare, irrespective of where beneficiary lives or receives care.
  - Ability to create longitudinal cohorts.
- **Claims**
Getting the best of both worlds…

Ascertaining patient population

**Registry**

- Processing of claims is a prerequiste for payment.
- Medicare is the largest payer in the US, especially for those over 65 years of age.

**Claims**

Risk Stratification

**Registry**

- Uses operational definitions to capture patient disease conditions.
- Used for developing risk prediction models based on specific disease states for specific procedures.
- Designed by clinicians to evaluate their practices.

**Claims**

Longitudinal Follow-up

**Registry**

- Able to capture all services reimbursed through Medicare, irrespective of where beneficiary lives or receives care.
- Ability to create longitudinal cohorts.

**Claims**

-
Goals

• Getting the most out of registries and claims.

• Linked clinical-claims datasets:
  – who’s done it, and how we can do it too.

• Future directions
Coronary Revascularization

- AHA/ACC/STS dataset linked to Medicare Claims

ASCERT (ACCF and STS Database Collaboration on the Comparative Effectiveness of Revascularization Strategies)

WS Weintraub (Care Health System, Newark, DE)
American College of Cardiology 2012 Scientific Sessions

- An observational study of about 190,000 patients in the US who underwent nonemergent revascularization for two- or three-vessel coronary disease
- Goal: To determine whether the best strategy to use in patients requiring revascularization for coronary artery disease should be catheter-based or surgery-based
- ASCERT compared catheter-based and surgery-based procedures using existing databases from the ACC and STS, as well as the Centers for Medicare and Medicaid Services' 100% denominator file data, to examine long-term outcomes following revascularization
Linked Clinical Claims Dataset

The NEW ENGLAND JOURNAL of MEDICINE

Comparative Effectiveness of Revascularization Strategies


Supported by a grant (RC2HL101489) from the National Heart, Lung, and Blood Institute.
Main Finding

Figure 3. Rates of Survival in the CABG and PCI Populations, from an Analysis Adjusted with the Use of Inverse Probability Weighting. Cumulative mortality with CABG and with PCI and the relative risk of CABG as compared with PCI are shown. The inset shows the same data on an enlarged y axis.
This study also shows the specific advantages of linking clinical and administrative databases. Clinical databases are well suited to risk adjustment and the identification of clinically important subgroups but lack information on long-term outcomes. Administrative data sets have limited capacity for clinical considerations, but they provide information on long-term outcomes. Linking clinical data with administrative data capitalizes on the advantages of each.
Transplant Surgery

• UNOS linked with Medicare Claims
Cancer Research

- Surveillance, Epidemiology, and End Results
  - Links claims with cancer stage
How We Can Too…

• KEY ELEMENT:
  – Unique patient identifiers are present in the SVS-PSO
  – No need for probabilistic match
How We Can Too…

• **KEY ELEMENT:**
  – Allows easy, discrete, inexpensive matching of VQI patients to claims
## Linking VQI to Claims

### Data Source

<table>
<thead>
<tr>
<th>Data Source (Years)</th>
<th>n</th>
<th>Match Type</th>
<th>Main Outcome Measure: Short-Term (30-day)</th>
<th>Main Outcome Measure: Long-Term (5-year)</th>
<th>Long-Term Follow Up</th>
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<tbody>
<tr>
<td>VQI 2003-2009</td>
<td>3,800 CEA</td>
<td>Unique patient identifier (First Name, Last Name, Social Security Number)</td>
<td>stroke, MI re-intervention, death</td>
<td>stroke, restenosis, re-intervention, death</td>
<td>1 Year (85%)</td>
</tr>
<tr>
<td>Medicare Claims (2003-2009)</td>
<td>800,000 CEA</td>
<td>(First Name, Last Name, Social Security Number)</td>
<td>stroke, MI re-intervention, death</td>
<td>stroke, re-intervention, death</td>
<td>5 years (100%)</td>
</tr>
</tbody>
</table>
What Do You Need To Match?

<table>
<thead>
<tr>
<th>Variable in VQI</th>
<th>Variable in Medicare Claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Identifier</td>
<td>Patient Identifier</td>
</tr>
<tr>
<td>First/Middle/Last Name</td>
<td>First/Middle/Last Name</td>
</tr>
<tr>
<td>Social Security #</td>
<td>Social Security #</td>
</tr>
<tr>
<td>Date of Birth</td>
<td>Date of Birth</td>
</tr>
<tr>
<td>Procedural Identifier</td>
<td>Procedural Identifier</td>
</tr>
<tr>
<td>Date of Surgery</td>
<td>Date of Surgery</td>
</tr>
<tr>
<td>Zip-code of Procedural Location</td>
<td>Zip-code of Procedural Location</td>
</tr>
<tr>
<td>Hospital Identifier</td>
<td>Hospital Identifier</td>
</tr>
<tr>
<td>Surgeon Identifier</td>
<td>Surgeon Identifier</td>
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</table>
What Outcomes Can Be Assessed?

Table 4. Main Outcome Measures

<table>
<thead>
<tr>
<th>Main Outcome Measure</th>
<th>VSGNE</th>
<th>Medicare Claims</th>
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<tbody>
<tr>
<td></td>
<td>Definition</td>
<td>Definition</td>
</tr>
<tr>
<td>Stroke</td>
<td>Major/Minor</td>
<td>Major/Minor</td>
</tr>
</tbody>
</table>
| Re-intervention      | Stent or revisionary CEA | CAS or revisionary CEA                | ICD9 procedure code for CAS (00.61, 00.63)  
                        |                                   | ICD9 procedure codes for revision of CEA (38.12) |
| Death                | Death (confirmed by SSDI) | Death                                | From Denominator File                                    |
How Will We Ensure Data Security?
Goals

• Getting the most out of registries and claims.

• Linked clinical-claims datasets:
  – who’s done it, and how we can do it too.

• Future directions
## R21 Application

<table>
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This electronic grants application is intended to be used to apply for the specific Federal funding opportunity referenced here. If the Federal funding opportunity listed is not the opportunity for which you want to apply, close this application package by clicking on the “Cancel” button at the top of this screen. You will then need to locate the correct Federal funding opportunity, download its application and then apply.

This opportunity is only open to organizations, applicants who are submitting grant applications on behalf of a company, state, local or tribal government, academia, or other type of organization.

* Application Filing Name: Likosky_R21_Health_IT
Conceptual Model

Patient variables in registry data alone → AUC curve (registry alone)

Patient variables in registry data alone and long-term efficacy from claims → AUC curve (registry and claims)

Better Risk Prediction → Avoid Unnecessary Surgery

Translate improvement in decision-making into less unnecessary surgery and lower costs
How This Will Work

VQI Registry Data:
- **Strength:**
  - Demographic and clinical peri-operative detail
- **Location:**
  - Society for Vascular Surgery’s Patient Safety Organization (SVS-PSO)

Medicare Claims Data:
- **Strength:**
  - Comprehensive long-term follow-up for efficacy
- **Location:**
  - The Dartmouth Institute for Health Policy and Clinical Practice (TDI)

Merged Health IT Tool:
- **Strength:**
  - Combined clinical detail and long-term efficacy
- **Location:**
  - Society for Vascular Surgery’s Patient Safety Organization (SVS-PSO)
Eventual Goals

• CEA / CAS
• Stroke-free survival
Eventual Goals

- CEA / CAS
- LEB/PVI
- EVAR/AAA

- Stroke-free survival
- Amputation-free survival
- Reintervention-free survival

Will eventually automate nearly all follow-up in the VQI
Eventual Goals

- CEA / CAS
- LEB/PVI
- EVAR/AAA

Will eventually automate nearly all follow-up in the VQI

- Stroke-free survival
- Amputation-free survival
- Reintervention-free survival
Goals

• Getting the most out of registries and claims.
  – Use the best part of each tool.

• Linked clinical-claims datasets:
  – The SVS-PSO has positioned us to do this inexpensively, accurately, and easily.

• Future directions
  – Efforts are underway to make this a reality.
Questions?

Contact Information:

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c.bosela@svspso.org