The Society for Vascular Surgery®
Vascular Quality Initiative®

2012 Vascular Annual Meeting®
June 8, 2012
Current State of the VQI®

Carrie Bosela
Vascular Quality Initiative®

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

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Procedures Captured</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>
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
• Add Filters to Narrow Down to Population of Interest
Analytics & Reporting Engine

Benchmark Results With All Other VQI Participants

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>My Results (N=59)</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>38.1% (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 ± 2.0 (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% (9)</td>
<td>10.2% (19)</td>
</tr>
<tr>
<td>Emergent</td>
<td>1.4% (1)</td>
<td>1.1% (2)</td>
</tr>
</tbody>
</table>
analytics & reporting engine

- 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
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
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.
Primary CEA - Any Stroke or Death Rate by Physician

Arranged by Descending Stroke/Death Rate (n=8265)

January 1, 2003 – December 31, 2011

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)

Parameters
Pathology
Occlusive
Indication
All
Diabetes
All
Dialysis
All
Pre-Adm Living
All
Statin Use
All
Ambulation Pre-Op
All
Prosthetic
All

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.
Infra-inguinal Bypass - Death or Major Amputation Rate by Center
Arranged by Descending Death/Major Amputation Rate (n=4668)
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)

- observed
- expected

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

Medical Center

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 PSO, LLC, is considered privileged and confidential according to the provisions of 42 CFR Part 3.
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.
January 1, 2003 – December 31, 2011

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
Pre-op Medication Usage

- Beta-blockers
- ASA-Clopidogrel
- Statins


Percentage Usage: 40%, 50%, 60%, 70%, 80%, 90%, 100%
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

Most Recent Surgeon Variation: 45% - 100%

60% at Target of 90% Usage
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

### Case Data:
- Number of cases reviewed: 93
- Mean Post-Op Length of Stay: 1.2
- Median Post-Op Length of Stay: 1.0
- Mean Hospital Length of Stay: 1.4
- Mean Total Hospital Charges: $12,665

### Post-Operative Outcomes / Complications

<table>
<thead>
<tr>
<th>Event</th>
<th>Own (n</th>
<th>%)</th>
<th>AMAG YTD (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cranial Nerve Injury:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VII</td>
<td>6.0%</td>
<td>(5</td>
<td>93)</td>
<td>4.5% (11</td>
</tr>
<tr>
<td>IX</td>
<td>1.2%</td>
<td>(1</td>
<td>93)</td>
<td>1.6% (4</td>
</tr>
<tr>
<td>X</td>
<td>3.8%</td>
<td>(3</td>
<td>93)</td>
<td>2.9% (7</td>
</tr>
<tr>
<td>XI</td>
<td>10.8%</td>
<td>(10</td>
<td>93)</td>
<td>9.2% (20</td>
</tr>
<tr>
<td>Other</td>
<td>0.0%</td>
<td>(0</td>
<td>93)</td>
<td>0.3% (1</td>
</tr>
</tbody>
</table>

### Neurologic events:

<table>
<thead>
<tr>
<th>Event</th>
<th>Own (n</th>
<th>%)</th>
<th>AMAG YTD (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ipsilateral</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIA</td>
<td>1.2%</td>
<td>(1</td>
<td>93)</td>
<td>1.2% (3</td>
</tr>
<tr>
<td>Minor stroke</td>
<td>0.0%</td>
<td>(0</td>
<td>93)</td>
<td>0.0% (0</td>
</tr>
<tr>
<td>Major stroke</td>
<td>0.0%</td>
<td>(0</td>
<td>93)</td>
<td>0.6% (0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Event</th>
<th>Own (n</th>
<th>%)</th>
<th>AMAG YTD (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contralateral</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIA</td>
<td>1.2%</td>
<td>(1</td>
<td>93)</td>
<td>0.4% (1</td>
</tr>
<tr>
<td>Minor stroke</td>
<td>0.0%</td>
<td>(0</td>
<td>93)</td>
<td>0.0% (0</td>
</tr>
<tr>
<td>Major stroke</td>
<td>0.0%</td>
<td>(0</td>
<td>93)</td>
<td>0.6% (0</td>
</tr>
</tbody>
</table>

### Other events:

<table>
<thead>
<tr>
<th>Event</th>
<th>Own (n</th>
<th>%)</th>
<th>AMAG YTD (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetition symptoms - Seizure or hemorrhage</td>
<td>0.0% (0</td>
<td>93)</td>
<td>0.0% (0</td>
<td>246)</td>
</tr>
<tr>
<td>IV med required for HYPERTension</td>
<td>10.8% (10</td>
<td>93)</td>
<td>12% (12</td>
<td>246)</td>
</tr>
<tr>
<td>IV med required for HYPOtension</td>
<td>5.0% (5</td>
<td>93)</td>
<td>7.8% (13</td>
<td>246)</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>1.2%</td>
<td>(1</td>
<td>93)</td>
<td>0.4% (1</td>
</tr>
<tr>
<td>Dyssrhythmia (new)</td>
<td>0.0%</td>
<td>(0</td>
<td>93)</td>
<td>2.6% (5</td>
</tr>
<tr>
<td>CHR</td>
<td>0.0%</td>
<td>(0</td>
<td>93)</td>
<td>0.4% (1</td>
</tr>
<tr>
<td>Wound Infection</td>
<td>0.0%</td>
<td>(0</td>
<td>93)</td>
<td>0.0% (0</td>
</tr>
<tr>
<td>Return to OR for Bleeding</td>
<td>1.2%</td>
<td>(1</td>
<td>93)</td>
<td>1.6% (4</td>
</tr>
<tr>
<td>Return to OR for Neurologic event</td>
<td>1.2%</td>
<td>(1</td>
<td>93)</td>
<td>0.8% (2</td>
</tr>
</tbody>
</table>

### Discharge Medications:

<table>
<thead>
<tr>
<th>Medication</th>
<th>Own (n</th>
<th>%)</th>
<th>AMAG YTD (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA</td>
<td>89% (74</td>
<td>93)</td>
<td>89% (218</td>
<td>246)</td>
</tr>
<tr>
<td>Fibrin</td>
<td>6.4% (7</td>
<td>93)</td>
<td>10.2% (25</td>
<td>246)</td>
</tr>
<tr>
<td>Other antithrombotic</td>
<td>9.8% (9</td>
<td>93)</td>
<td>9.4% (22</td>
<td>246)</td>
</tr>
<tr>
<td>Statin</td>
<td>81% (67</td>
<td>93)</td>
<td>95% (210</td>
<td>246)</td>
</tr>
<tr>
<td>Beta blockers</td>
<td>93% (75</td>
<td>93)</td>
<td>87% (212</td>
<td>246)</td>
</tr>
</tbody>
</table>

### Discharge destination:

<table>
<thead>
<tr>
<th>Destination</th>
<th>Own (n</th>
<th>%)</th>
<th>AMAG YTD (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>98% (91</td>
<td>93)</td>
<td>98% (235</td>
<td>246)</td>
</tr>
<tr>
<td>Rehab facility</td>
<td>2.4% (2</td>
<td>93)</td>
<td>3.5% (8</td>
<td>246)</td>
</tr>
<tr>
<td>Skilled nursing facility</td>
<td>0.0% (0</td>
<td>93)</td>
<td>0.8% (2</td>
<td>246)</td>
</tr>
<tr>
<td>Expired</td>
<td>0.0% (0</td>
<td>93)</td>
<td>0.6% (0</td>
<td>246)</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 |

## Post-Operative Outcomes / Complications

<table>
<thead>
<tr>
<th>Case Data</th>
<th>Your results</th>
<th>MMC YTD</th>
<th>All surgeons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cases reviewed:</td>
<td>23</td>
<td>122</td>
<td></td>
</tr>
<tr>
<td>Mean Post-Op Length of Stay:</td>
<td>8.9</td>
<td>6.8</td>
<td></td>
</tr>
<tr>
<td>Mean Hospital Length of Stay:</td>
<td>11.3</td>
<td>7.7</td>
<td></td>
</tr>
<tr>
<td>Mean Total Hospital Charges:</td>
<td>$40,261</td>
<td>$37,042</td>
<td></td>
</tr>
</tbody>
</table>

### Wound infection:
- 0.0% (0/23) | 0.0% (0/122)

### Post-op Bleeding:
- Percent requiring 1-2 units: 0.0% (0/23) | 0.8% (1/122)
- Percent requiring >3 units: 0.0% (0/23) | 0.0% (0/122)
- Percent requiring return to OR: 0.0% (0/23) | 0.0% (0/122)

### Myocardial Infarction:
- 4.3% (1/23) | 4.1% (5/122)

### Dysrhythmia (new):
- 0.7% (2/23) | 0.0% (5/122)

### CHF:
- 0.0% (0/23) | 2.5% (3/122)

### Respiratory complications:
- Pneumonia: 0.0% (0/23) | 0.0% (0/122)
- Required ventilator post-op: 0.0% (0/23) | 1.6% (2/122)

### Change in renal function:
- Increase in creat >0.5 mg/dl: 15.0% (3/20) | 8.4% (9/107)

### Return to OR for:
- Infection: 0.0% (0/23) | 0.0% (0/122)
- Thrombosis: 4.3% (1/23) | 2.5% (3/122)
- Revision: 0.0% (0/23) | 0.8% (1/122)

### Ipsilateral amputation:
- Minor: 4.3% (1/23) | 7.4% (9/122)
- BK amputation: 0.0% (0/23) | 2.5% (3/122)
- AK amputation: 0.0% (0/23) | 0.0% (0/122)

### Discharge patency:
- Palpable graft pulse: 65% (12/19) | 50.0% (58/114)
- Palpable distal pulse: 45% (10/22) | 48.6% (53/114)
- ABI increase >0.15: 0.0% (0/22) | 1.5% (2/114)
- Duplex: 0.0% (0/22) | 0.0% (1/114)

### Discharge medications:
- ASA: 83% (10/23) | 79% (93/116)
- Plavix: 28.1% (6/23) | 19.6% (32/169)
- Statin: 73% (17/23) | 80% (95/119)
- Beta blockers: 100% (23/23) | 91% (108/119)

### Discharge ambulation:
- Ambulatory: 39% (7/18) | 33% (10/30)
- Ambulatory with assistance: 65% (15/23) | 62% (74/119)
- Wheelchair: 4.3% (1/23) | 0.0% (0/119)
- Bedrest: 0.0% (0/23) | 0.0% (0/119)

### Discharge destination:
- Home: 61% (14/23) | 68% (31/46)
- Rehab facility: 33% (7/21) | 24.0% (30/125)
- Skilled nursing facility: 6% (2/23) | 0.0% (0/122)
- Expired: 0% (0/23) | 2.5% (3/122)

Percent previous year followed up in study period: Within 10-14 months of index surgery.
Registry in Practice

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.
Recertification

VSGNNE is an ABS approved registry
Registry in Practice

VSGNNE registry

- QA, QI
- Outcomes evaluation – Provider Division
- PQRS
- MOC
So Cal VOICe
SOUTHERN CALIFORNIA VASCULAR OUTCOMES IMPROVEMENT COLLABORATIVE +
SOUTHERN CALIFORNIA VASCULAR SURGICAL SOCIETY
Fred Weaver, MD
SoCal VOICE
Southern California Vascular Outcomes Improvement Collaborative
So Cal VOICE

- Participating Institutions
  - Cedars-Sinai Medical Center
  - Keck Hospital of USC
  - Loma Linda University Medical Center
  - Ronald Reagan UCLA Medical Center
  - Sharp Grossmont Hospital
  - Tarzana Medical Center
  - UCSD University Hospital
  - William Suval, MD
SoCal VOICe
Administrative Structure

- Medical Director: Fred A Weaver
- Executive Committee: One representative from each participating institution or practice group (3 or more members) USC, UCSD, Sharp, UCLA, Loma Linda, Cedars, Tarzana, Victorville
- Quality Committee: Karen Woo, Representatives from participating institutions, epidemiologist
- Project Manager/Administrative Assistant
Website

- http://www.vascularweb.org/regionalgroups/VOICE/Pages/default.aspx
Southern California Vascular Surgical Society

- Established 1982
- Membership 173
- Executive Council, President, President-elect, Treasurer, Recorder, Councillors (3)
- Boston Based Executive Director Terri Comegys
- Annual Meeting, Spring
- Average attendance 100
- Friday night reception, weekend half day meetings
Process of Integration

- Initial presentation of concept and panel at annual meeting 2010, Jack Cronenwett visiting speaker
- Bylaws presented to SCVSS in 2011
- SCVSS provided startup funds
- Executive and Quality Committee Appointments
- First semiannual meeting SoCal VOICe January 2012
- Second semiannual meeting in May 2012 at SCVSS
- Bylaws adopted by SoCal VOICe and SCVSS
- Executive Director of SoCal VOICe ex-officio member of SCVSS Executive Council
- Agree to semiannual meetings, Spring SCVSS meeting and Fall SoCal VOICe institutions
Advantages of Regional Group Alignment with Regional Vascular Society

- Established Organization
- Member list
- Leaders in Southern California Vascular Surgery
- Annual Meeting
- Re-energize scientific meeting of organization
- Neutral fiduciary agent
Disadvantages of Regional Group Alignment with Regional Vascular Society

- Need to work within constraints of existing regional vascular society
- Parallel leadership
- Linked to viability of regional vascular society
- Poor fiduciary oversight
VOICe Quality Committee

- SCVSS abstracts
  - Practice pattern variability in peripheral vascular interventions: Initial results from the So Cal VOICe database
  - Patient demographics in the So Cal VOICe database: Comparison with the VQI population
Moving Towards a QI Project:

Our Work in the VSGNE

Philip Goodney, MD, MS
Goals

• Regional Quality Collaboratives – what are they good for?

• Building momentum in quality improvement projects

• Getting “down and dirty” with chlorhexidine
Goals

• Regional Quality Collaboratives – what are they good for?

• Building momentum in quality improvement projects

• Getting “down and dirty” with Chlorhexidine
Regional Quality Collaboratives

Mission Statement:

The Vascular Study Group of New England is a voluntary, cooperative group of clinicians, hospital administrators, and research personnel organized to improve the care of patients with vascular disease.

By collecting and exchanging information, the group strives to continuously improve the quality, safety, effectiveness, and cost of caring for patients with vascular disease.
What We’ve Done Well:

• Benchmarking
What We’ve Done Well:

• Benchmarking
What We’ve Done Well:

- Risk Prediction

Predicting 1-year mortality after elective abdominal aortic aneurysm repair

Adam W. Beck, MD, a Philip P. Goodney, MD, a Brian W. Nolan, MD, a Donald S. Likosky, PhD, a,b Jens Eldrup-Jorgensen, MD, a and Jack L. Cronenwett, MD, a for the Vascular Study Group of Northern New England, Lebanon, NH; and Portland, Me

The Vascular Study Group of New England
Cardiac Risk Index (VSG-CRI) predicts cardiac complications more accurately than the Revised Cardiac Risk Index in vascular surgery patients

Daniel J. Bertges, MD, a,b Philip P. Goodney, MD, a Yuanyuan Zhao, MD, b Andreas Schanzer, MD, a Brian W. Nolan, MD, b Donald S. Likosky, PhD, b Jens Eldrup-Jorgensen, MD, a and Jack L. Cronenwett, MD, a for the Vascular Study Group of New England, Burlington, VT; Lebanon, NH; and Portland, Me

Predicting ambulation status one year after lower extremity bypass

Philip P. Goodney, MD, a,b Donald S. Likosky, PhD, a,b and Jack L. Cronenwett, MD, a for the Vascular Study Group of Northern New England, Lebanon and Hanover, NH

Clopidogrel is not associated with major bleeding complications during peripheral arterial surgery

David H. Stone, MD, a Philip P. Goodney, MD, a,b Andreas Schanzer, MD, a Brian W. Nolan, MD, a,b Julie E. Adams, MD, a Richard J. Powell, MD, a Daniel B. Walsh, MD, a and Jack L. Cronenwett, MD, a for the Vascular Study Group of New England, Lebanon, NH; Worcester, Mass; and Burlington, VT

Factors associated with stroke or death after carotid endarterectomy in Northern New England

Philip P. Goodney, MD, Donald S. Likosky, PhD, and Jack L. Cronenwett, MD, for the Vascular Study Group of Northern New England, Lebanon, NH

Completion imaging after carotid endarterectomy in the Vascular Study Group of New England

Jessica B. Wallaert, MD, a Philip P. Goodney, MD, MS, a John J. Vignati, MD, a David H. Stone, MD, a Brian W. Nolan, MD, MS, a Daniel J. Bertges, MD, a Daniel B. Walsh, MD, a and Jack L. Cronenwett, MD, a Lebanon and Laconia, NH; and Burlington, VT

Validation of the PIll CLI risk score for the prediction of amputation-free survival in patients undergoing infrainguinal autogenous vein bypass for critical limb ischemia

Andreas Schanzer, MD, a Philip P. Goodney, MD, MS, a Youfu Li, MD, MPh, a Mohammad Esfandi, MD, a Jack Cronenwett, MD, a Louis Messina, MD, a and Michael S. Coutee, MD, a for the Vascular Study Group of Northern New England, Worcester, Mass; Lebanon, NH; San Francisco, Calif.
What We’ve Done Well:

• Building Collaboration

VSGNNE 2003
What We’ve Done Well:

• Building Collaboration

VSGNNE 2003

VSGNNE 2012
What We’ve Done Well:

Vascular Quality Initiative

Number of Participating Centers

160 Centers, 38 States + Ontario
> 2500 Procedures per Month
VSGNE at Regional-National Meetings and Peer-Reviewed Publications

- Presentations (~20 Unique Presenters)
- Publications (~12 Unique First Authors)
Where We Have Room To Improve:

Risk Modeling and Benchmarking Publications

25+
Where We Have Room To Improve:

- Risk Modeling and Benchmarking Publications: 25+
- Quality Improvement Publications: 2
Where We Have Room To Improve:

• Using quality improvement to demonstrate real change in vascular surgery.
  – It is one thing to report and study your own data
  – It is another to change practice AND improve care

• Not a problem unique to our effort
  – NSQIP
  – SCOAP
  – STS/AATS
Goals

• Regional Quality Collaboratives – what are they good for?

• Building momentum in quality improvement projects

• Getting “down and dirty” with Chlorhexidine
Room To Improve?

• How can we use QI to:
  – change practice

• AND
  – improve care?
Obstacles

• Agreement versus Dissent
• Evidence versus Equipoise
• Cost versus... well, Cost
• Motivation versus Inertia
• Mistrust versus Teamwork
A journey of a thousand miles begins with a single step.

Lao Tzu, cc 1904
How We’ve Done QI

• “Testing the Waters”
  – Feedback given at biannual meetings regarding the use of patch angioplasty in CEA

• “Baby Steps” Our First QI Project
  – Beta blockers

• What comes next?
  – Chlorhexidine
Testing the Waters

- Biannual meetings where surgeons meet, discuss, and review their processes of care and outcomes.

- Patch angioplasty was a quality measure selected for review at inception, and followed over time.

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<table>
<thead>
<tr>
<th>Year</th>
<th>Use of Beta-Blockers (%)</th>
<th>Use of Aspirin or Plavix (%)</th>
<th>Use of Statins (%)</th>
<th>Symptomatic Cases (%)</th>
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<tbody>
<tr>
<td>2003</td>
<td>90% (Benchmark)</td>
<td>80%</td>
<td>60%</td>
<td>50%</td>
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<tr>
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<td>90%</td>
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<tr>
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</tr>
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</table>

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<table>
<thead>
<tr>
<th>Year</th>
<th>Volume</th>
<th>No Completion Duplex or Angiogram (%)</th>
<th>No Patch (%)</th>
<th>IV Meds Required for Hyper/Hypotension (%)</th>
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<tr>
<td>2003</td>
<td>90%</td>
<td>80%</td>
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<tr>
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<td>95%</td>
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<td>2007</td>
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<td>2008</td>
<td>100%</td>
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<td>100%</td>
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</tbody>
</table>

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<table>
<thead>
<tr>
<th>Year</th>
<th>Cranial Nerve Injury (%)</th>
<th>Past-operative Complications (%)</th>
<th>Not Discharged Home (%)</th>
<th>Any Ips/Contra Stroke or Death (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>90%</td>
<td>80%</td>
<td>60%</td>
<td>50%</td>
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<tr>
<td>2004</td>
<td>95%</td>
<td>90%</td>
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<td>2008</td>
<td>100%</td>
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</tbody>
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January 2003 - December 2008: Region, N=5130
Primary Carotid Endarterectomy - VSGNNE
VSGNE Meeting

• No mandates were made; we simply shared our patterns of practice

• We used this feedback mechanism to encourage surgeons to adopt this process of care into their practices
Results of this “Intervention”

<table>
<thead>
<tr>
<th>Year</th>
<th>Restenosis Rate</th>
<th>Conventional CEA without Patch</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>13%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>12%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>10%</td>
<td></td>
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<tr>
<td>2006</td>
<td>6%</td>
<td></td>
<td>p&lt;0.001</td>
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<tr>
<td>2007</td>
<td>5%</td>
<td></td>
<td>p&lt;0.003</td>
</tr>
<tr>
<td>2008</td>
<td>4%</td>
<td></td>
<td></td>
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</table>

80-99% Restenosis
Baby Steps: Our First QI Project

• We chose something:
  – Easy (“low-hanging fruit”)
  – Broadly endorsed
  – Evidence-based
  – Directly related to better outcomes
  – Widely generalizable

• Beta Blockers!!!
  – Working groups, prescription teams, evidence summaries, group projects and feedback to providers
Increased Pre-op Beta Blocker Use

Rate of Beta Blocker Use

Jan-Mar 2003

68%

Oct-Dec 2008

88%

P < 0.001
Increased Pre-op Beta Blocker Use

This should be PERFECT!!!
QI Hall of Fame, here we come!!
No Change in Post-op MI Rate

Rate of Beta Blocker Use
- Jan-Mar 2003: 68%
- Oct-Dec 2008: 88%
- Rate of Post-op MI
- Jan-Mar 2003: 5.2%
- Oct-Dec 2008: 5.5%

$p=0.876$
Baby Steps: What We Learned

• We can change practice
  – Great motivation and teamwork
  – Collaborative effort resulted in significant change

• However, we didn’t improve care.
  – Evidence must be tailored to the challenge at hand, in real world practice
    • We learned that we had few “high-risk” patients not already on beta blockers
    • Future efforts need to be risk-stratified, patient-specific
Goals

• Regional Quality Collaboratives – what are they good for?

• Building momentum in quality improvement projects

• Getting “down and dirty” with Chlorhexidine
Undeterred: On to the Next Project!

• Building on this momentum
  – Formation of a Quality Committee
  – Appointment of Committee Chairperson

• Chartered to oversee quality improvement efforts within VSGNE
  – Choose and spearhead Quality Improvement initiatives
  – Develop practice guidelines
  – Develop care plans and clinical aids
Quality Committee

- Chair, Alik Farber, Boston Medical Center

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark Conrad</td>
<td>Massachusetts General Hospital</td>
</tr>
<tr>
<td>Alik Farber</td>
<td>Boston Medical Center</td>
</tr>
<tr>
<td>Philip Goodney</td>
<td>Dartmouth</td>
</tr>
<tr>
<td>Robert Hawkins</td>
<td>Maine Medical Center</td>
</tr>
<tr>
<td>Jeffrey Indes</td>
<td>Yale</td>
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<td>Lowell Kahn</td>
<td>Baystate</td>
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<tr>
<td>William Mackey</td>
<td>Tufts</td>
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<tr>
<td>Matthew Menard</td>
<td>Brigham and Women’s Hospital</td>
</tr>
<tr>
<td>April Nadeau</td>
<td>Central Maine Heart &amp; Vascular</td>
</tr>
<tr>
<td>Andrew Stanley</td>
<td>University of Vermont</td>
</tr>
<tr>
<td>William Wilson</td>
<td>Elliot Health System</td>
</tr>
<tr>
<td>Mark Wyers</td>
<td>Beth Israel-Deaconess</td>
</tr>
</tbody>
</table>
What Should We Improve?

- Surgical Site Infection with LEB
- Contrast Nephropathy
- Plavix Use
- PVI adjuncts
- Endoleak Rates
- Post Op MI
- Diabetes Control
Deciding on a QI Project

- Literature Review

*Figure 2. Kaplan–Meier Curves for Freedom from Surgical-Site Infection (Intention-to-Treat Population).*

Patients who received chlorhexidine–alcohol were significantly more likely to remain free from surgical-site infection than were those who received povidone–iodine (P=0.004 by the log-rank test). In the chlorhexidine–alcohol group, 39 patients had events (9.5%) and data from 370 patients (90.5%) were censored; in the povidone–iodine group, 71 patients had events (16.1%) and data from 369 patients (83.9%) were censored.
Deciding on a QI Project

• Survey: What were we interested in improving?
Deciding on a QI Project

• Survey: What were we interested in improving?

• There is significant variability in practice patterns with regard to LEB and factors that may be related to development of SSI
• This presents an opportunity for further clarification of best practices
• This presents an opportunity for Quality Improvement.
Deciding on a QI Project

- Consensus!!!

- Focus initial QI efforts on one overarching topic
  - Lower Extremity Bypass
    - Surgical Site Infection
Moving Ahead:
Topics For Our Committee

Blue = Agreement  White = Debate

- All patients undergoing LEB should have skin prepared with Chlorhexidine
- Reason for not using Chlorhexidine to be noted
- Follow SSI rates
- Definitions: Should we change wound infection to SSI?
  - SSI (CDC): deep incisional, superficial incisional, organ space infection
- Should we allow for any preparation? Only Chloraprep?
- Should we insist on uniform application?
- Other issues?
Summary: Goals

• Regional Quality Collaboratives – what are they good for?
  – Benchmarking, risk models = Easy; QI=hard

• Building momentum in quality improvement projects
  – Start simple, learn from experience and mistakes
  – Keep the momentum going

• Getting “down and dirty” with Chlorhexidine
  – Teamwork, consensus building
  – Organizational structure, planning, and commitment are important
The Vascular Quality Initiative

Hardwiring the collection and reliability of the data

John (Jeb) Hallett, M.D., FACS
Clinical Professor of Surgery, MUSC
Roper St Francis Heart and Vascular Center
Charleston, South Carolllina
Nothing to Disclose
The Hypothesis

Variation in practice is the enemy of quality...and lower cost
The two major problems in medicine must be improved

It is all about hardwiring better behavior
Quality Data is the new “biopsy and autopsy” in healthcare
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
The “game changers”

Software Program
Over 4,000 cases in less than two years
The most challenging issues

• *Data entry process and reliability*

• *One year follow-up (80% between 9-21 months)*

• *Website development*
Doc, this is your story
Data Entry and Reliability

• Who enters data?
• When and where?
• Who validates the process and reliability?
• How do you help those who are failing to get it done?
Who enters the data?

• “The most reliable people”
• The surgeon
• The advanced clinical practitioners
• The office nurses
• The endovascular and OR staff
• Often, study coordinators!!
• Trained residents or students
The Study Coordinator
The Data Collection Process
(Example: PVI Form for the Endovascular Lab)

1. Workflow: “who does what... and when”.

2. Appointment of “who does what” – decide members of m2s User Group.

(Members of the m2s User Group for the Endovascular Lab Team= Physicians, NP’s, PA’s, Nurses: both in-house and private MD practice, and the Endovascular Lab’s Nurses/Techs/staff .....along with our Core Team Members.)
Training is Everything!!!

3. Training the User Group:
   We gathered them together…..

- Presentation: Why a National Database
- m2s Demo via Teleconference
- Handed out User Manual, and gave them their User Name/Password into system.
- Coordinator phone # ….just a call away.

4. Set “Go Live” date(s)- spent day in the Endovascular Lab with each MD for data entry into system, and walked staff through it …. and as needed…..
Data Validation

*a reconcile of two databases*

Weekly Coordinator supplies m2s “Incomplete” patient listing to the person responsible for making sure the patients are completed and submitted in m2s.

*(Note: please FAX to a secure line/email “mark secure”.*

*In private practices*, this list gets sent to ONE person from each MD practice. This can vary from NP-PA-office Nurse.

*In university hospitals*, coordinators can send this patient list to the person the MD assigns to the task of making sure the patients are completed and submitted in m2s.
Data Validation = Data Reconciliation

**You want ALL your patients in the database!**

**Monthly** – it’s time to compare/reconcile patients in two databases:

1. Patients in your hospital systems database (run the ICD-9 codes)
2. Patients in m2s (coordinator runs report of all pts. in database)

*Now, compare the two patient lists:*

Patients in hospital system   =   Patients in m2s
The Key to Validation
Reconcile your database!

Repeat reconcile every Quarter….
then Yearly.

Remember, sanity is a good thing….
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 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 of each center 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.
Entire Carolinas Vascular Quality Group

[Graph showing procedures and their count]
The Improbable “Perfect”
One-year followup

• Essential to the outcomes analysis
• Mandated now at 80% between 9-21 months
• Some can be done by telephone
• “Program” the follow-up with your electronic medical record (EMR)
• Keep your m2s website “up and running during clinic”
Design and use a website to communicate best practices
The solutions require....

- Provider teamwork to collect data and to make meaningful changes in care

- Empowering the patient through interactive, less expensive technologic communication to adhere to evidence-based medicine and to alert us when they are getting trouble
Questions?

Contact Information:

Carrie Bosela, SVS PSO

c.bosela@svspso.org