Southeastern Vascular Study Group

Fall Meeting
Friday, September 14\textsuperscript{th} 2018
Reynolds Lake Club –
Lake Oconee, Georgia
PLEASE SIGN THE ATTENDANCE SHEET
Agenda

10:00-10:15
Welcome and SEVSG/VQI Update- Yazan Duwayri, MD

10:15-10:30
National VQI Update- SVS PSO representative Dan Neal

10:30-10:45
Pathways Development Update – M2S representative Debbie MacAulay (via teleconference)

10:45 -11:05
Arterial and Venous Quality Council Updates –Adam Beck, MD and Olamide Alabi, MD

11:05-11:40
Live data abstraction- Alexis Neill, RN, MSN and David Snyder, BBA, BSN

11:40-11:55
Best Papers I and II- Emily Spangler, MD

12:25-12:55
Quality Report Generation- Zdenek Novak, MD, PhD

12:55-1:15
Regional Report Findings and Governing Council Update - Yazan Duwayri, MD

1:15-1:35
Making a Case for Quality Reporting through VQI in a Large Healthcare System- Susan Shafii, MD

1:35-1:50
Best Papers III and IV – Jaime Benarroch-Gampel, MD

1:50-2:00
Transcervical Carotid Stenting in VQI- Siddharth Patel, MD

2:00-2:45
Successes and Failures Session: open group discussion of successes, failures, and areas of struggle

2:45
Closing Remarks- SEVSG Future Directions & Action Items- Yazan Duwayri, MD
Welcome and Introductions

Albany Vascular Specialist Center
BayCare Health System Morton Plant Hospital
Celebration Health
Central Florida Regional Hospital
Coastal Vascular & Interventional- PLLC
Cobb Hospital
Delray Medical Center
Emory Saint Joseph's Hospital
Florida Hospital
Floyd Medical Center
Grady Memorial Hospital (GA)
Gregory L. Nedurian MD PA
Kennestone Hospital
Lee Memorial Health System - Gulf Coast Medical Center
Lee Memorial Health System - HealthPark
Lyerly Baptist Neurosurgery
Mayo Clinic Florida
Memorial Health University Medical
Memorial Hospital Pembroke
Memorial Hospital West
Memorial Regional Hospital
Miami Vein Center
Mobile Infirmary
North Okaloosa Medical Center

Northeast Georgia Medical Center, Inc.
Northside Hospital Atlanta
Northside Hospital Cherokee
Northside Hospital Forsyth
Orlando Health - Dr. P. Phillips Hospital
Orlando Health - Orlando Regional
Orlando Health - South Seminole
Piedmont Athens Regional Medical
Piedmont Hospital
Redmond Regional Medical Center
Rush Foundation Hospital
Sarasota Memorial Hospital
South Miami Hospital
St. Anthony's Hospital
Surgical Specialists of Central Florida
Tampa General Hospital
Tenet Florida Physician Services, LLC
The Emory Clinic
The Medical Center, Navicent Health
The Vein and Vascular Institute of Tampa Bay
University Of Alabama Medical Center
University of Florida- Gainesville
Vascular Associates of South Alabama
Vascular Surgery Associates
<table>
<thead>
<tr>
<th>Hospital/Center</th>
<th>City, State</th>
<th>Contact</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health First Holmes Regional Medical Center</td>
<td>Melbourne, FL</td>
<td>Need a physician contact</td>
<td>Proposal</td>
</tr>
<tr>
<td>Southern Regional Medical Center</td>
<td>Riverdale, GA</td>
<td>Dr. Daniel McDevitt</td>
<td>Awaiting Sign-off</td>
</tr>
<tr>
<td>Baptist Hospital-Jacksonville</td>
<td>Jacksonville, FL</td>
<td>Dr. Erin Moore</td>
<td>Prospect</td>
</tr>
<tr>
<td>Baptist Health of SFL/Baptist Hospital of Miami/South Miami Hospital/Bethesda Hospital East/Bethesda Hospital/West</td>
<td>Miami, FL</td>
<td>Dr. Juan Carlos Pereda</td>
<td>Proposal</td>
</tr>
<tr>
<td>Seven Rivers Regional Medical Center</td>
<td>Crystal River, FL</td>
<td>Need a physician contact</td>
<td>Contracting</td>
</tr>
<tr>
<td>Florida Hospital Zephyrhills</td>
<td>Zephyrhills, FL</td>
<td>Dr. Paul Citrin</td>
<td>Proposal</td>
</tr>
<tr>
<td>Lakeland Regional Medical Center</td>
<td>Lakeland, FL</td>
<td>Need a physician contact</td>
<td>Contracting</td>
</tr>
<tr>
<td>Blake Medical Center</td>
<td>Bradenton, FL</td>
<td>Dr. Harmatz</td>
<td>Contracting</td>
</tr>
<tr>
<td>Florida Hospital Memorial Medical Center</td>
<td>Daytona Beach, FL</td>
<td>Need a physician contact</td>
<td>Prospect</td>
</tr>
</tbody>
</table>
Number of Participating Centers

Location of VQI Participating Centers

489 Centers, 46 States + Canada
National VQI Update: Dan Neal, SVS PSO
**Total Procedures Captured** (as of 8/1/2018) | **502,543**
---|---
Peripheral Vascular Intervention | 159,153
Carotid Endarterectomy | 105,536
Infra-Iguinal Bypass | 47,247
Endovascular AAA Repair | 42,585
Hemodialysis Access | 41,749
Carotid Artery Stent | 22,833
Varicose Vein | 22,231
Supra-Iguinal Bypass | 15,801
Thoracic and Complex EVAR | 12,149
Lower Extremity Amputations | 11,184
Open AAA Repair | 11,569
IVC Filter | 10,506

**VQI Total Procedure Volume**

Total Procedure Volume tab reflects net procedures added to the registry for the month
Data Audits starting in 2018!!

- **Inter-rater reliability exercise:** We asked for volunteers to abstract identical cases for selected registries to see how often they agree/disagree. Results have led to a massive effort to revamp Pathways led by Carrie and registry chairs.

- **Random Center Audits:** We plan to audit random cases at selected centers in order to 1) estimate the overall VQI data-element error rate, and 2) identify areas for improvement. Details to come!

- **New PSO-Center Communication Tool for Data Cleanup:** We will use our new web-based “Audit Tool” to ask centers to verify/correct suspicious data entries (out of range, improbable or impossible values in specific records).
Educational Webinars 2018

August 22: TEVAR case abstraction

September: Mandatory Follow-up fields

September: QI Webinar Validation Case Study! ROI

October: 30 day follow-up

Early November: PVI Basic Form Webinar

Mid November: Wrapping up a QI project, 2019 and Participation Award information

Sign-up info on the VQI web site.
2018 reporting schedule

- **July**: Fall Regional Reports
- **July**: Pilot System-Level Fall Reports for Inova and Ohio Health (new!)
- **August**: Physician Dashboards
- **August**: COPI Report: INFRA LOS (new!)
- **September**: COPI Report: INFRA SSI (new!)
- **October**: QI Initiative Update
- **November**: Cumulative Physician Dashboards (new!)
Registry Updates:

- **Hemodialysis Access:** Under major revision with release in 2018 (TBD)
- **Vascular Medicine Registry:** Finalizing changes for release in 2019 (TBD)
- **30-day Follow-up Measures**
- **Varicose Vein:** Under revisions to only collect data on treated leg (shorten the form)
- **Venous Stent Registry:** Under development
- **PVI short form:** Under development
Having the SSN in the record allows us to:

- Match patients with the Social Security Death Index which allows accurate assessment of mortality following vascular procedures
- Match patients in VQI to their respective Medicare claims to assess long term outcomes which greatly enhances the length of follow up without requiring data entry
- Match patients within VQI to ensure a unique patient identifier for research

M2S has designed its security and privacy protocols to ensure PHI is safeguarded in accordance with HIPAA and HITECH. PHI is encrypted both while being transmitted and when data is at rest.

VQI is organized under the legal structure of a patient safety organization (PSO) which has greater data protection than most!!
<table>
<thead>
<tr>
<th>Title</th>
<th>Registry</th>
<th>Enrolling</th>
<th>Targets</th>
<th>Follow-Up</th>
<th>Typical $ Per Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCAR Surveillance Project</td>
<td>CAS</td>
<td>Yes</td>
<td>-</td>
<td>1 yr</td>
<td>NCD</td>
</tr>
<tr>
<td>Bard® LifeStent® Popliteal Artery Stent Project</td>
<td>PVI</td>
<td>Yes</td>
<td>74 pts 30 sites</td>
<td>1, 2 yr</td>
<td>$1400</td>
</tr>
<tr>
<td>Medtronic IN.PACT® Admiral® DCB ISR Project</td>
<td>PVI</td>
<td>Yes</td>
<td>300 pts 50 sites</td>
<td>1, 2, 3 yr</td>
<td>$1950</td>
</tr>
<tr>
<td>CREST 2 Registry</td>
<td>CAS</td>
<td>Yes</td>
<td>-</td>
<td>1 yr</td>
<td>-</td>
</tr>
<tr>
<td>TEVAR Dissection Surveillance Project</td>
<td>TEVAR</td>
<td>No*</td>
<td>600 pts 50 sites</td>
<td>30 day 1, 2, 3, 4, 5 yr</td>
<td>$4000</td>
</tr>
<tr>
<td>Lombard Aorfix Surveillance Project</td>
<td>EVAR</td>
<td>No</td>
<td>234 pts 50 sites</td>
<td>30 day 1, 2, 3, 4, 5 yr</td>
<td>$4000</td>
</tr>
</tbody>
</table>

*Expect enrollment to re-open in late 2018

For more information, contact PATHWAYSsupport@m2s.com
Who attended?

Feedback?
VQI@VAM Highlights:

- **Introduction to the New Member Guide**
  By: Nancy Heatley, Education and Research Projects Manager

- **Tools and Resources of the Vascular Quality Initiative**
  By: Cheryl Jackson, Director of Quality

Links to the new Member Guide and the new QI Project Guide Supplement can be found on the Members Only section of the VQI website in the National Section:

https://www.vqi.org/national-data/
Winner of the Poster Competition:

"Implementation of a Structured Protocol to Improve Rates of VQI Registry Vascular Patient Follow Up" from NY Presbyterian - Weill Cornell Medicine

Authors: Melissa R. Katzman, PA-C, Katherine E. Greger, PA-C, Ashley Graham, BS, Andrew J. Meltzer, MD, and Darren B. Schneider, MD
Governing Council Update
Yazan Duwayri, MD
SVS Guidelines & VQI

SVS Guidelines

- Are they being followed?
- Are they adopted over time?
- Do they influence outcomes?
- Can VQI help answer these questions?
AAA Guidelines published in January JVS

119 recommendations/suggestions

15 guidelines potentially measurable in VQI

Compliance with guideline
  - Quit smoking > 2 weeks before OAAA – 44%
  - EVAR size threshold – 58%
  - Preservation of IIA during EVAR – 98%
Preop Stress Test

Size guideline for AAA repair

OAAA: Compliance with Stress Testing Guideline by Center

EVAR: Compliance with AAA Diameter Guideline by Center

Centers (centers with <10 cases omitted)
Using Cell Saver by Center
Adherence to use of cell saver had decreased inpatient and one year mortality following open AAA repair.

Guideline compliance improves outcomes.
Next Steps:

– Consideration of creation of center level reports for OAAA in Spring of 2019
– VQI using the Guidelines to inform registry variables
– Potential to expand this exercise to other procedures
Notes:
1) In all reports, regional data are not shown for regions with <3 centers participating in the applicable registry.
2) In “by Center” bar charts, unless noted, data are not shown for centers with <10 cases.
3) In all graphics, “*” indicates a p-value<.05.
4) This report includes all data that had been entered into the VQI as of Jan. 1, 2017.
Dashboard

The table below summarizes your center’s results as presented in each of the subsequent reports and provides regional and national benchmarks for comparison. In the “Your Center” column, percentages represent the rate of cases with the noted outcome. Numbers in parentheses are the number of cases with the outcome/the total number of cases meeting the exclusion criteria (see the full report for details). In the “Region” and “VQI” columns, the numbers represent the 25th, 50th (median) and 75th percentiles for centers in your region and across all centers in the VQI.

Your center’s results are highlighted in green if your center is at or above the top 25th percentile nationally, in yellow if your center is among the middle 50% of centers, and in red if at or below the bottom 25th percentile.
### Dashboard

| Registry                  | Outcome                                | Your Center % (n/N) | Your Region [25p|50p|75p] | VQI Overall [25p|50p|75p] |
|---------------------------|----------------------------------------|---------------------|-----------------------------|-----------------------------|
| All                       | Total Procedure Volume                 |                     | [27 | 98 | 245]                  | [37 | 134 | 330]                  |
| Multiple (July 2015-June 2016) | Long-Term Follow-Up                  |                     | [31% | 67% | 79%]                  | [44% | 72% | 86%]                  |
| Multiple                  | Discharge Medications                  |                     | [73% | 79% | 90%]                  | [75% | 83% | 90%]                  |
| AVACCESS                  | Primary AVF vs. Graft                  |                     | [77% | 83% | 85%]                  | [74% | 85% | 90%]                  |
| CAS                       | In-Hospital Stroke/Death               | [2% | 0% | 0%]               | [3% | 0% | 0%]               |
| CEA                       | In-Hospital Stroke/Death               | [1% | 0% | 0%]               | [1% | 0% | 0%]               |
| CEA                       | LOS>1 Day                              | [36% | 25% | 13%]               | [33% | 22% | 14%]               |
| EVAR                      | LOS>2 Days                             | [25% | 16% | 11%]               | [18% | 11% | 3%]               |
| EVAR (July 2015-June 2016) | Sac Diameter at LTFU                  | [13% | 33% | 55%]               | [36% | 56% | 72%]               |
| INFRA                     | Chlorhexidine Skin Prep                | [67% | 100% | 100%]             | [86% | 98% | 100%]             |
| INFRA                     | Major Complications                    | [5% | 0% | 0%]               | [6% | 0% | 0%]               |
| IVCF (2017)               | Filter Retrieval                       | [8% | 25% | 28%]               | [1% | 27% | 45%]               |
| LEAMP                     | Postop Complications                   | [22% | 14% | 12%]               | [24% | 17% | 10%]               |
| OAAA                      | In-Hospital Mortality                  | [0% | 0% | 0%]               | [2% | 0% | 0%]               |
| PVI                       | Ultrasound Guidance                    | [66% | 94% | 98%]               | [74% | 93% | 98%]               |
| PVI                       | ABI/TBI Reported                       | [56% | 67% | 91%]               | [65% | 81% | 92%]               |
| SUPRA                     | Postop Complications                   | [33% | 17% | 0%]               | [33% | 23% | 11%]               |
| TEVAR (July 2015-June 2016) | Sac Diameter at LTFU                  | [32% | 50% | 53%]               | [25% | 43% | 56%]               |
| WV (2017)                 | PROMs at LTFU                          | [77% | 100% | 100%]             | [38% | 97% | 100%]             |
## Total Procedure Volume, All Years (2003-May 2018)

<table>
<thead>
<tr>
<th>Your Region (N)</th>
<th>VQI Overall (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVACCESS</td>
<td>3928</td>
</tr>
<tr>
<td>CAS</td>
<td>1546</td>
</tr>
<tr>
<td>CEA</td>
<td>7254</td>
</tr>
<tr>
<td>EVAR</td>
<td>2506</td>
</tr>
<tr>
<td>INFRA</td>
<td>3297</td>
</tr>
<tr>
<td>IVCF</td>
<td>1083</td>
</tr>
<tr>
<td>LEAMP</td>
<td>1284</td>
</tr>
<tr>
<td>OAAAA</td>
<td>598</td>
</tr>
<tr>
<td>PVI</td>
<td>7874</td>
</tr>
<tr>
<td>SUPRA</td>
<td>1170</td>
</tr>
<tr>
<td>TEVAR</td>
<td>1119</td>
</tr>
<tr>
<td>Varicose Veins</td>
<td>2451</td>
</tr>
<tr>
<td>Overall</td>
<td>34110</td>
</tr>
<tr>
<td></td>
<td>475893</td>
</tr>
</tbody>
</table>
“Others” indicates centers that do not belong to a regional group.
Physician Specialties by Region

Physician Specialties Across VQI (as of May 31, 2018, N=3776 Physicians)
Physician Specialties Across Your Region (as of May 31, 2018, N=318 Physicians)
# Percentage of Procedures With 9 Months or Greater Follow-Up

Procedures performed between July 1, 2015 and June 30, 2016

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVACCESS</td>
<td>860 (73%)</td>
<td>6740 (70%)</td>
</tr>
<tr>
<td>CAS</td>
<td>205 (66%)</td>
<td>3301 (64%)</td>
</tr>
<tr>
<td>CEA</td>
<td>1413 (61%)</td>
<td>15935 (70%)</td>
</tr>
<tr>
<td>EVAR</td>
<td>439 (67%)</td>
<td>6345 (74%)</td>
</tr>
<tr>
<td>INFRA</td>
<td>634 (70%)</td>
<td>6504 (75%)</td>
</tr>
<tr>
<td>IVCF</td>
<td>296 (50%)</td>
<td>2086 (69%)</td>
</tr>
<tr>
<td>LEAMP</td>
<td>205 (60%)</td>
<td>2051 (74%)</td>
</tr>
<tr>
<td>OAAA</td>
<td>82 (80%)</td>
<td>1244 (73%)</td>
</tr>
<tr>
<td>PVI</td>
<td>1839 (53%)</td>
<td>23511 (71%)</td>
</tr>
<tr>
<td>SUPRA</td>
<td>226 (68%)</td>
<td>2227 (72%)</td>
</tr>
<tr>
<td>TEVAR</td>
<td>179 (51%)</td>
<td>1976 (69%)</td>
</tr>
<tr>
<td>Overall (July 2015-June 2016)</td>
<td>6378 (61%)</td>
<td>71920 (71%)</td>
</tr>
<tr>
<td>2015</td>
<td>6265 (64%)</td>
<td>70651 (74%)</td>
</tr>
<tr>
<td>2016</td>
<td>6191 (53%)</td>
<td>73127 (60%)</td>
</tr>
</tbody>
</table>
Long-Term Follow-Up by Center in Your Region (July 2015-June 2016)

- Other centers in your region
- Your center

"***" indicates center's rate differs significantly from the regional rate.

Long-Term Follow-Up by Region Across VQI (July 2015-June 2016)

- New York
- Southeast
- Others
- Virginias
- New England
- So. Cal.
- Nor.
- Cal.*
- SOVONET
- VQI
- Midwest
- Rocky Mtns.
- Pacific NW
- Carolinas
- MidSouth
- Mid-Atlantic
- G. Lakes
- Michigan
- Mid-America
- Up. Midwest

"**" indicates centers that do not belong to a regional group. "***" indicates region's rate differs significantly from the VQI rate.
Discharge Medications

Procedures performed between June 1, 2017 and May 31, 2018

Excludes patients who died in hospital and patients who were not treated for medical reason or non-compliant. “Antiplatelet” is defined as ASA or P2Y12 inhibitor

<table>
<thead>
<tr>
<th>Number of Procedures at Your Center</th>
<th>Antiplatelet+Statin</th>
<th>Antiplatelet Only</th>
<th>Statin Only</th>
<th>Neither</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your Region</td>
<td>4936</td>
<td>76%</td>
<td>14%</td>
<td>5%</td>
</tr>
<tr>
<td>VQI overall</td>
<td>69404</td>
<td>81%</td>
<td>12%</td>
<td>4%</td>
</tr>
</tbody>
</table>
Discharge Antiplatelet+Statin Rate by Center in Your Region (June 2017-May 2018)

*** indicates center’s rate differs significantly from the regional rate.

Discharge Antiplatelet+Statin Rate by Region Across VQI (June 2017-May 2018)

“Other” indicates centers that do not belong to a regional group. *** indicates region’s rate differs significantly from the VQI rate.
Hemodialysis Access: Percentage of Primary AVF vs. Graft

Procedures performed between June 1, 2017 and May 31, 2018

Excludes patients with previous access procedure in the same arm.

<table>
<thead>
<tr>
<th></th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of access procedures meeting inclusion criteria</td>
<td></td>
<td>603</td>
<td>5641</td>
</tr>
<tr>
<td>Percentage with primary AVF</td>
<td></td>
<td>75%</td>
<td>82%</td>
</tr>
</tbody>
</table>
Rate of Primary AVF Access in Your Region (June 2017-May 2018)

- Other centers in your region
- Your center

Centers (centers with <10 cases not shown)

*** indicates center’s rate differs significantly from the regional rate.

Rate of Primary AVF Access by Region Across VQI (June 2017-May 2018)

- Michigan*
- Mid-America*
- Southeast*
- Carolinas
- Mid-Atlantic
- VQI
- rocky Mtns.
- Virgini
- New England
- New York*
- Midwest
- MidSouth*

Others indicates centers that do not belong to a regional group. *** indicates region’s rate differs significantly from the VQI rate.
Rate of Primary AVF Access by Year

- Your Center
- Your Region
- VQI Overall
Carotid Artery Stent: Stroke or Death in Hospital
Procedures performed between June 1, 2017 and May 31, 2018
Elective procedures, excluding prior ipsilateral CAS, and dissection, trauma and “other” lesion types

The table below shows the number of CAS procedures meeting the inclusion criteria that were in the VQI and the observed and expected rates of in-hospital stroke or death for those cases.

<table>
<thead>
<tr>
<th></th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of CAS procedures meeting inclusion criteria</td>
<td>369</td>
<td>4000</td>
<td></td>
</tr>
<tr>
<td>Observed rate of stroke or death among procedures meeting inclusion criteria</td>
<td>2.4%</td>
<td>2.2%</td>
<td></td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>352</td>
<td>3672</td>
<td></td>
</tr>
<tr>
<td>Observed rate of stroke or death among cases with complete data</td>
<td>2.3%</td>
<td>2.1%</td>
<td></td>
</tr>
<tr>
<td>Expected rate of stroke or death among cases with complete data*</td>
<td>1.7%</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>0.41</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

*“Expected rate” is the rate estimated by a statistical model that accounts for patient characteristics, including age, gender, race, BMI, comorbidities, medication and stroke and vascular history. “Cases with complete data” include patients who have data on all of those factors.
Rate of In-Hospital Stroke or Death After CAS in Your Region (June 2017-May 2018)

Other centers in your region | Your center | Observed | Expected
---|---|---|---

Centers (centers with <10 cases not shown)

*** indicates center's observed rate differs significantly from its expected rate.

Rate of In-Hospital Stroke or Death After CAS by Region Across VQI (June 2017-May 2018)

Observed | Expected
---|---

“Others” indicates centers that do not belong to a regional group. *** indicates region's observed rate differs significantly from its expected rate.
Rate of In-Hospital Stroke or Death After CAS by Year

- Your Center
- Your Region
- VQI Overall
Carotid Endarterectomy: Stroke or Death in Hospital
Procedures performed between June 1, 2017 and May 31, 2018
Elective procedures, excluding prior ipsilateral CEA and concomitant CABG, endovascular or other arterial procedure
The table below shows the number of CEA procedures meeting the inclusion criteria in the VQI, and the observed and expected rates of in-hospital stroke or death for those cases.

<table>
<thead>
<tr>
<th></th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of CEA procedures meeting inclusion criteria</td>
<td>973</td>
<td>13860</td>
<td></td>
</tr>
<tr>
<td>Observed rate of stroke or death among procedures meeting inclusion criteria</td>
<td>1.1%</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>922</td>
<td>13147</td>
<td></td>
</tr>
<tr>
<td>Observed rate of stroke or death among cases with complete data</td>
<td>1.2%</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Expected rate of stroke or death among cases with complete data*</td>
<td>1.1%</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>0.76</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

*“Expected rate” is the rate estimated by a statistical model that accounts for patient characteristics, including age, gender, race, BMI, comorbidities, medication and stroke and vascular history. “Cases with complete data” include patients who have data on all of those factors.
**Rate of In-Hospital Stroke or Death After CEA in Your Region (June 2017-May 2018)**

- Other centers in your region
- Your center
- Observed
- Expected

**Centers (centers with <10 cases not shown)**

“***” indicates center’s observed rate differs significantly from its expected rate.

**Rate of In-Hospital Stroke or Death After CEA by Region Across VQI (June 2017-May 2018)**

- Observed
- Expected

“Others” indicates centers that do not belong to a regional group. “***” indicates region’s observed rate differs significantly from its expected rate.
Rate of In-Hospital Stroke or Death After CEA by Year

- June 2014-May 2015
- June 2015-May 2016
- June 2016-May 2017
- June 2017-May 2018

- Your Center
- Your Region
- VQI Overall
Carotid Endarterectomy: Percentage of Patients with LOS>1 Day
Procedures performed between June 1, 2017 and May 31, 2018
Elective procedures, excluding prior ipsilateral CEA, concomitant CABG, proximal endovascular or other arterial operation, in-hospital death with LOS<=1 day, procedures done on weekends or not
The table below shows the number of CEA procedures meeting inclusion criteria in the VQI, and the observed and expected rates of those cases with LOS>1 Day.

<table>
<thead>
<tr>
<th></th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of CEA procedures meeting inclusion criteria</td>
<td>817</td>
<td>12452</td>
<td></td>
</tr>
<tr>
<td>Observed rate of LOS&gt;1 day among procedures meeting inclusion criteria</td>
<td>26%</td>
<td>24%</td>
<td></td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>786</td>
<td>11954</td>
<td></td>
</tr>
<tr>
<td>Observed rate of LOS&gt;1 among cases with complete data</td>
<td>25%</td>
<td>24%</td>
<td></td>
</tr>
<tr>
<td>Expected rate of LOS&gt;1 among cases with complete data*</td>
<td>24%</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>0.22</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

*“Expected rate” is the rate estimated by a statistical model that accounts for patient characteristics, including age, gender, race, BMI, comorbidities, medication and stroke and vascular history. “Cases with complete data” include patients who have data on all of those factors.
**Rate of CEA Patients With LOS>1 Day in Your Region (June 2017-May 2018)**

- Other centers in your region
- Your center
- Observed
- Expected

"***" indicates center's observed rate differs significantly from its expected rate.

**Rate of CEA Patients With LOS>1 Day by Region Across VQI (June 2017-May 2018)**

- Observed
- Expected

"Others" indicates centers that do not belong to a regional group. "***" indicates region's observed rate differs significantly from its expected rate.
Endovascular AAA Repair: Percentage of Patients with LOS>2 Days

Procedures performed between June 1, 2017 and May 31, 2018
Excludes ruptured aneurysms and in-hospital deaths with LOS<=2 days, patients with prior aortic surgery, procedures not done on day of admission and weekend procedures
The table below shows the number of EVAR procedures meeting the inclusion criteria and the observed and expected rates of those cases with LOS>2 Days.

<table>
<thead>
<tr>
<th></th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of EVAR procedures meeting inclusion criteria</td>
<td>322</td>
<td>5207</td>
<td></td>
</tr>
<tr>
<td>Observed rate of LOS&gt;2 days among procedures meeting inclusion criteria</td>
<td>16%</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>287</td>
<td>4936</td>
<td></td>
</tr>
<tr>
<td>Observed rate of LOS&gt;2 among cases with complete data</td>
<td>15%</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Expected rate of LOS&gt;2 among cases with complete data*</td>
<td>13%</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>0.18</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

*“Expected rate” is the rate estimated by a statistical model that accounts for patient characteristics, including age, gender, race, BMI, comorbidities, medication and stroke and vascular history. “Cases with complete data” include patients who have data on all of those factors.
**Rate of EVAR Patients With LOS>2 Days in Your Region** (June 2017-May 2018)

- **Other centers in your region**
- **Your center**
- **Observed**
- **Expected**

Centers (centers with <10 cases not shown)

"***" indicates center's observed rate differs significantly from its expected rate.

**Rate of EVAR Patients With LOS>2 Days by Region Across VQI** (June 2017-May 2018)

- **Observed**
- **Expected**

"Others" indicates centers that do not belong to a regional group. "***" indicates region's observed rate differs significantly from its expected rate.
EVAR: Rate of Sac Diameter Reporting at Long-Term Follow-Up

Procedures performed between July 1, 2015 and June 30, 2016

The table below shows the number of EVAR procedures in the VQI, and the percentage of those cases in which the patient had a follow-up visit between 9 and 21 months post-surgery at which a sac diameter was recorded.

<table>
<thead>
<tr>
<th></th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of EVAR procedures</td>
<td>439</td>
<td>6345</td>
</tr>
<tr>
<td>Percentage with sac diameter recorded at follow-up</td>
<td>45%</td>
<td>55%</td>
</tr>
</tbody>
</table>
Rate of LTFU Sac Diamenter Reporting in Your Region (July 2015-June 2016)

- Other centers in your region
- Your center

*** indicates center's rate differs significantly from the regional rate.

Rate of LTFU Sac Diameter Reporting by Region Across VQI (July 2015-June 2016)

* others* indicates centers that do not belong to a regional group. *** indicates region’s rate differs significantly from the VQI rate.
Rate of LTFU Sac Diameter Reporting by Year

July 2012-June 2013
July 2013-June 2014
July 2014-June 2015
July 2015-June 2016

Your Center
Your Region
VQI Overall
Infrainguinal Bypass: Percentage of Procedures with Chlorhexidine or Chlorhexidine+Alcohol Skin Prep

Procedures performed between June 1, 2017 and May 31, 2018

In VQI patients, chlorhexidine and chlorhexidine+alcohol skin preps have been shown to reduce the surgical-site infection rate by 50% compared to iodine-based skin prep. Chlorhexidine+iodine and chlorhexidine+iodine+alcohol skin preps have not been shown to reduce the infection rate, but rates of their use are also reported in the table below.

<table>
<thead>
<tr>
<th></th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of procedures</td>
<td>547</td>
<td>6680</td>
</tr>
<tr>
<td>Rate of chlorhexidine or chlorhexidine+alcohol skin prep</td>
<td>84%</td>
<td>88%</td>
</tr>
<tr>
<td>Rate of chlorhexidine+iodine or chlorhexidine+iodine+alcohol skin prep</td>
<td>9%</td>
<td>5%</td>
</tr>
<tr>
<td>Rate of in-hospital surgical-site infection</td>
<td>2.6%</td>
<td>2.6%</td>
</tr>
</tbody>
</table>
Percentage With Chlorhexidine or Chlorhexidine+Alcohol Skin Prep in Your Region (June 2017-May 2018)

- Other centers in your region
- Your center

Centers (centers with <10 cases not shown)

**“” indicates center’s rate differs significantly from the regional rate.**

Percentage With Chlorhexidine or Chlorhexidine+Alcohol Skin Prep by Region (June 2017-May 2018)

- Canada
- MidSouth
- G. Lakes
- So. Cal.
- Carolinas
- Mid-Atlantic
- Southeast
- Rocky Mtns.
- VQI
- Mid-America
- Up.
- Midwest
- New England
- VirginiaS
- New York
- SOVONET
- Michigan
- Pacific NW
- Midwest
- Nor. Cal.

“Others” indicates centers that do not belong to a regional group. “**” indicates region’s rate differs significantly from the VQI rate.
Infrainguinal Bypass: Rate of Major Complications
Procedures performed between June 1, 2017 and May 31, 2018
Includes only patients with indication of rest pain or tissue loss. Major complications are defined as in-hospital death, ipsilateral BK or AK amputation or graft occlusion. The table below shows the number of INFRA cases with indication of rest pain or tissue loss in the VQI, and the percentage of those cases that resulted in in-hospital death, ipsilateral amputation or graft occlusion.

<table>
<thead>
<tr>
<th></th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of INFRA procedures meeting inclusion criteria</td>
<td>294</td>
<td>4008</td>
</tr>
<tr>
<td>Percentage with major complications after INFRA</td>
<td>4.4%</td>
<td>4.2%</td>
</tr>
</tbody>
</table>
Rate of Major Complications After INFRA in Your Region (June 2017-May 2018)

- Other centers in your region
- Your center

Cents (centers with <10 cases not shown)

*** indicates center's rate differs significantly from the regional rate.

Rate of Major Complications After INFRA by Region Across VQI (June 2017-May 2018)

- Rocky Mtns.
- MidSouth
- New England
- Pacific NW
- Midwest
- Nor.
- Cal.
- So. Cal.
- Up. Midwest
- VQI
- G. Lakes
- Carolinas
- Southeast
- Mid-America
- New York
- Mid-Atlantic
- SOVONET
- Michigan
- Canada
- Virginia

"Others" indicates centers that do not belong to a regional group. *** indicates region's rate differs significantly from the VQI rate.
IVCF: Percentage of Temporary Filters With Retrieval or Attempt at Retrieval
Procedures performed between Jan. 1 and Dec. 31, 2017
Excludes patients with permanent filters and patients who have died since discharge

<table>
<thead>
<tr>
<th></th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of procedures meeting inclusion criteria</td>
<td>82</td>
<td>1566</td>
</tr>
<tr>
<td>Percentage with filter retrieval, or attempt at retrieval</td>
<td>22%</td>
<td>37%</td>
</tr>
<tr>
<td>Percentage not retrieved because not clinically indicated</td>
<td>13%</td>
<td>4%</td>
</tr>
<tr>
<td>Percentage not retrieved because patient declined</td>
<td>10%</td>
<td>2%</td>
</tr>
</tbody>
</table>
Rate of IVCF Retrieval in Your Region (Jan-Dec 2017)

Centers (centers with <10 cases not shown)

"***" indicates center’s rate differs significantly from the regional rate.

Rate of IVCF Retrieval by Region Across VQI (Jan-Dec 2017)

"Others" indicates centers that do not belong to a regional group. "***" indicates region’s rate differs significantly from the VQI rate.
Lower-Extremity Amputation: Rate of Postop Complications

Procedures performed between June 1, 2017 and May 31, 2018

Complications are defined as myocardial infarction, dysrhythmia, congestive heart failure, surgical site infection, renal or respiratory complication and/or amputation-related reoperation.

<table>
<thead>
<tr>
<th></th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of amputation procedures</td>
<td>508</td>
<td>2947</td>
</tr>
<tr>
<td>Percentage with complications after LEAMP</td>
<td>16%</td>
<td>18%</td>
</tr>
</tbody>
</table>
Rate of Complications After LEAMP in Your Region (June 2017-May 2018)

- Other centers in your region
- Your center

Centers (centers with <10 cases not shown)

“***” indicates center’s rate differs significantly from the regional rate.

Rate of Complications After LEAMP by Region Across VQI (June 2017-May 2018)

- Midwest
- Carolinas
- Southeast
- Up.-Midwest
- Virgalias
- VQI
- New England
- Mid-America
- New York

“Others” indicates centers that do not belong to a regional group. “***” indicates region’s rate differs significantly from the VQI rate.
Non-Ruptured Open AAA: In-Hospital Mortality

Procedures performed between June 1, 2017 and May 31, 2018
Excludes ruptured aneurysms

The table below shows the number of OAAA procedures meeting the inclusion criteria in the VQI, and the observed and expected rates of in-hospital death for those cases. (SEVSG did not have at least 3 centers with 10 procedures)
PVI: Percentage of Percutaneous Femoral Access Sites Using Ultrasound Guidance

Procedures performed between June 1, 2017 and May 31, 2018
Excludes cut-down access guidance

The table below shows the number of percutaneous femoral PVI access sites in the VQI, the percentage of those cases in which ultrasound access guidance was used, the percentage in which a closure device was used, and the rate of hematoma.

<table>
<thead>
<tr>
<th></th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of percutaneous femoral access sites</td>
<td>1450</td>
<td>23903</td>
</tr>
<tr>
<td>Rate of ultrasound access guidance</td>
<td>73%</td>
<td>77%</td>
</tr>
<tr>
<td>Rate of closure device usage</td>
<td>61%</td>
<td>68%</td>
</tr>
<tr>
<td>Rate of any hematoma (minor, moderate or major)</td>
<td>1.5%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Rate of moderate or major hematoma</td>
<td>0.3%</td>
<td>0.6%</td>
</tr>
</tbody>
</table>
Rate of Ultrasound Access Guidance in Your Region (June 2017-May 2018)

- Other centers in your region
- Your center

Centers (centers with <10 cases not shown)

*** indicates center's rate differs significantly from the regional rate.

Rate of Ultrasound Access Guidance by Region Across VQI (June 2017-May 2018)


“Others” indicates centers that do not belong to a regional group. *** indicates region’s rate differs significantly from the VQI rate.
PVI: Percentage of Claudicants With ABI or Toe Pressure Reported Before Procedure

Procedures performed between June 1, 2017 and May 31, 2018

“ABI or toe pressure reported” indicates at least one measure was recorded for the side of the operation, or on both sides for bilateral and aortic procedures.

The table below shows the number of PVI procedures with indication of claudication in the VQI, and the percentage of those cases in which ABI or toe pressure was recorded.

<table>
<thead>
<tr>
<th></th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of PVI procedures</td>
<td>704</td>
<td>11807</td>
</tr>
<tr>
<td>with indication of claudication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage with ABI/TBI recorded</td>
<td>71%</td>
<td>77%</td>
</tr>
<tr>
<td>before procedure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Rate of ABI/TBI Assessment Before PVI in Your Region (June 2017-May 2018)

- Other centers in your region
- Your center

*** indicates center's rate differs significantly from the regional rate.

Rate of ABI/TBI Assessment Before PVI by Region Across VQI (June 2017-May 2018)


“Others” indicates centers that do not belong to a regional group. *** indicates region's rate differs significantly from the VQI rate.
Supra-Inguinal Bypass: Rate of Postop Complications
Procedures performed between June 1, 2017 and May 31, 2018

Complications are defined as myocardial infarction, dysrhythmia, congestive heart failure, respiratory complications, renal complications, surgical site infection, graft infection, leg ischemia/emboli, reoperation, amputation and/or stroke.

The table below shows the number of SUPRA cases in the VQI, and the percentage of those cases that resulted in complication.

<table>
<thead>
<tr>
<th></th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of SUPRA procedures</td>
<td>181</td>
<td>2124</td>
</tr>
<tr>
<td>Percentage with complications after SUPRA</td>
<td>22%</td>
<td>24%</td>
</tr>
</tbody>
</table>
Rate of Complications After SUPRA in Your Region (June 2017-May 2018)

- Other centers in your region
- Your center

Centers (centers with <10 cases not shown)

*** indicates center’s rate differs significantly from the regional rate.

Rate of Complications After SUPRA by Region Across VQI (June 2017-May 2018)

“Others” indicates centers that do not belong to a regional group. *** indicates region’s rate differs significantly from the VQI rate.
TEVAR: Rate of Sac Diameter Reporting at Long-Term Follow-Up

Procedures performed between July 1, 2015 and June 30, 2016

The table below shows the number of TEVAR procedures in the VQI, and the percentage of those cases in which the patient had a follow-up visit between 9 and 21 months post-surgery at which a sac diameter was recorded.

<table>
<thead>
<tr>
<th></th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of TEVAR procedures</td>
<td></td>
<td>179</td>
<td>1976</td>
</tr>
<tr>
<td>Percentage with sac diameter recorded at follow-up</td>
<td></td>
<td>35%</td>
<td>42%</td>
</tr>
</tbody>
</table>
Rate of LTFU Sac Diameter Reporting in Your Region (July 2015-June 2016)

Centers (centers with <10 cases not shown)

*** indicates center’s rate differs significantly from the regional rate.

Rate of LTFU Sac Diameter Reporting by Region Across VQI (July 2015-June 2016)

“Others” indicates centers that do not belong to a regional group. *** indicates region’s rate differs significantly from the VQI rate.
Rate of LTFU Sac Diameter Reporting by Year


Your Center  Your Region  VQI Overall
Varicose Veins: Percentage of Procedures With Complete Patient-Reported Outcome Measures Recorded at Follow-Up

Procedures performed between Jan. 1 and Dec. 31, 2017

Includes only patients with any follow-up visit recorded.

All regional data omitted because most regions have <3 centers.

Patient-reported outcomes measures (PROMs) include heaviness, achiness, swelling, throbbing, itching, appearance and impact on work in side of operation.

**PROMs by Center Across VQI (Jan-Dec 2017)**

"***" indicates center’s rate differs significantly from the overall VQI rate.
Meeting Evaluation: