Carolinas Vascular Quality Group (CVQG)

May 6, 2022
9:00 AM – 12:00 PM ET
Hybrid
Meeting Attendance Credit

Before we get started, please sign in.

1. Click “Participants” in the box at the top or bottom of your screen.
2. If your full name is not listed, hover next to your name and you’ll see “rename”.
3. Click and sign in.

If you can’t sign in, please email Leka Johnson at ljohson@svspso.org and let her know the identifier you were signed in under (ex –LM7832 or your phone number).

**SPECIAL NOTE: We do give credit to residents/fellows that don’t have a PATHWAYS user account !!!

Sign in with your Full name, MD, Name of Institution
Appreciation and Thanks

- Katharine McGinigle, MD - Regional Medical Director
- Chandler Long, MD – Associate Medical Director
- Lynne Hampton - Regional Lead Data Manager
- Leila Mureebe, MD - SVS PSO Associate Medical Director
- Kristopher Huffman - Director Analytics & Analytic Team
- Jennifer Correa- Marketing Manager
- Betsy Wymer - SVS PSO Quality Director
- SVS PSO Staff
Site Profile

- Please routinely review your Center Characteristics for accuracy
- For those who have left your facility, please change their status to inactive and maintain current email addresses
## Agenda-Carolinas VQG-May 6, 2022

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>CE Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>9am</td>
<td>Welcome</td>
<td>No</td>
</tr>
<tr>
<td>9:05am</td>
<td>Regional Data Review – Katharine McGinigle, CVQG Medical Director</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Learning Objectives:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Use the VQI regional reports to establish quality improvement goals for the vascular patients (outcomes) and for their center (process).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Interpret and compare each centers’ VQI results to regional and national benchmarked data.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Learn, through group discussion the VQI regional results to improve the quality of vascular health care by monitoring measurable performance indicators, SVS PSO evidence-based research, and outcomes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Identify high performing regional vascular centers to discuss variations in care and clinical practice patterns to improve outcomes and prompt quality improvement recommendations for vascular care patients. Sharing of best practices/pathways of care.</td>
<td></td>
</tr>
<tr>
<td>10:05am</td>
<td>Regional QI Proposal - Katharine McGinigle, CVQG Medical Director</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Learning Objectives:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Use the VQI regional reports to establish quality improvement goals for the vascular patients (outcomes) and for their center (process).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Interpret and compare each centers’ VQI results to regional and national benchmarked data.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Learn, through group discussion the VQI regional results to improve the quality of vascular health care by monitoring measurable performance indicators, SVS PSO evidence-based research, and outcomes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Identify high performing regional vascular centers to discuss variations in care and clinical practice patterns to improve outcomes and prompt quality improvement recommendations for vascular care patients. Sharing of best practices/pathways of care.</td>
<td></td>
</tr>
</tbody>
</table>
## Agenda (con’t)

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>CE Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:35am</td>
<td>National VQI Update – Betsy Wymer, DNP, RN, RN-BC, Quality Director, PSO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Learning Objectives:</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>• Use the VQI regional reports to establish quality improvement goals for the vascular patients (outcomes) and for their center (process).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Identify high performing regional vascular centers to discuss variations in care and clinical practice patterns to improve outcomes and prompt quality improvement recommendations for vascular care patients. Sharing of best practices/pathways of care.</td>
<td></td>
</tr>
<tr>
<td>11:05am</td>
<td>AQC Update – Thomas Todoran, MD</td>
<td>No</td>
</tr>
<tr>
<td>11:15am</td>
<td>VQC Update – Maureen Sheehan, MD</td>
<td>No</td>
</tr>
<tr>
<td>11:25am</td>
<td>RAC Update – Elizabeth Genovese, MD</td>
<td>No</td>
</tr>
<tr>
<td>11:35am</td>
<td>Governing Council Update – Katharine McGinigle, MD</td>
<td>No</td>
</tr>
<tr>
<td>11:40am</td>
<td>Case Presentations</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Emily Spangler, MD – ERAS Aortic Guidelines – 20 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chandler Long, MD – Regional Aortic Data – going through data, pause</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Breakout Rooms – 15 min separate, 5 min discussion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>12pm</td>
<td>Open Discussion/Next Meeting/Meeting Evaluation</td>
<td>No</td>
</tr>
</tbody>
</table>
0900 Welcome and Introductions

0905 Regional Data Review
  Dr. Kate McGinigle, Regional Medical Director
  Dr. Chandler Long, Associate Regional Medical Director

1005 Committee Update
  ACQ Update – Dr. Thomas Todoran
  VQC Update – Dr. Maureen Sheehan
  RAC Update – Dr. Elizabeth Genovese
  GC Update – Dr. Kate McGinigle

1025 Break

1030 KEYNOTE SPEAKER
  Dr. Emily Spangler, University of Alabama Medical Center
  ERAS Aortic Guidelines
1050 Breakout Rooms

Leaders (Dr. McGinigle, Dr. Long, Dr. Mureebe, Dr. Genovese)

Discussion

How to use ERAS to improve and standardize aortic care and watch outcomes improve over upcoming years

1105 Group Discussion of Breakout Rooms

1120 National Updates

1200 Open Discussion/Next Meeting/Meeting Evaluation
No disclosures.
Welcome and Introductions

Alamance Regional Medical Center
Anmed Health
Atrium Health Cabarrus
Atrium Health Pineville
Atrium Health Union
Beaufort Memorial Hospital
Cape Fear Valley Health
CarolinaEast Medical Center
CaroMont Regional Medical Center
Catawba Valley Medical Center
Cone Health
Duke Raleigh Hospital
Duke University Medical Center
Lexington Medical Center
McLeod Regional Medical Center
Medical University Hospital Authority
Mission Hospital
New Hanover Regional Medical Center
Novant Health Forsyth Medical Center

Novant Health Matthews Medical Center
Novant Health Presbyterian Medical Center
PineHurst Surgical
Prisma Health Richland
Regional Medical Centers of Orangeburg and Calhoun Counties
Rex Hospital, Inc.
Roper St. Francis
Sanger Heart and Vascular Institute
Self Regional Health
Spartanburg Regional
Trident Medical Center
University of North Carolina Hospitals
Vidant Medical Center
Wake Forest University Baptist Health Medical Center
WakeMed Health & Hospitals-Cary Campus
WakeMed Health & Hospitals-Raleigh Campus
Wayne UNC Healthcare
Spring Regional Reports

Dr. Katharine McGinigle

VQI Regional Quality Report

Spring 2022

This report is patient safety work product generated within the SVS PSO, LLC, and is considered privileged and confidential.

About the Report

The VQI Regional Quality Report is produced semiannually to provide centers and regions targeted, comparative results and benchmarks for a variety of procedures, process measures, and postoperative outcomes. The report is organized into separate reports that can be quickly accessed by clicking on the report names in the table of contents on the left.

For drill-down and data feedback on your center’s cases, click on “VQI Case Appendix” in the table of contents on the left.
Important Notes

- All results are based on data entered into the VQI as of January 31, 2022. Any subsequent changes or updates to data after that date will not be reflected in this report.

- Procedure timeframes and inclusion/exclusion criteria are given at the top of each report. Cases are also excluded if outcomes are missing or not enough data was entered to determine whether the case met inclusion/exclusion criteria.

- Regions must have at least 3 centers with included cases for regional results to be displayed in tables and line charts.

- Regions must have at least 3 centers with at least 10 included cases per center for regional results to be displayed in bar charts. It is therefore possible for a region’s results to be displayed in tables and line charts, but not in bar charts.

- For risk-adjusted reports, regions must have at least 3 centers with at least 10 complete cases per center for regional results to be displayed in bar charts. It is therefore possible for a region’s results to be displayed in tables and line charts, but not in bar charts.

- In all graphics, "**" indicates a p-value <.05.
Important Updates

The following updates have been implemented to enhance and improve the Spring 2022 VQI Regional Quality Report:

• Number of Centers Displayed
  – All center-variation bar charts now show the number of centers displayed in the chart, as well as the total number of centers in the region contributing data to the associated report.

• Updated Region Volume Appendix
  – The Region Volume Appendix now contains entries for the “Procedure Volume” and “Procedure Volume, All Years” reports.
Report-Specific Updates

The following report-specific updates have been implemented to enhance and improve the specified report(s):

- **TFEM CAS**
  - Changed inclusion/exclusion criteria – Procedures with an approach of either Brachial or Radial are now included in both ASYMP and SYMP reports.

- **EVAR: SVS Sac Size Guideline**
  - Nomenclature change to “EVAR: SVS AAA Diameter Guideline”. No changes to the report itself.
Dashboard

The dashboard provides a high-level summarization of your center’s results for each of 25 reports, and gives both regional and VQI-wide benchmarks for comparison. The “Your Center” column gives the percentage of your center’s cases with the noted outcome. Numbers in parentheses give the number of cases with the outcome and the total number of cases meeting the inclusion criteria for that report. The “Your Region” and “VQI Overall” columns give the aggregate percentage of cases with the noted outcome, as well as the 10th, 25th, 50th (median), 75th, and 90th percentiles for centers in your region and VQI, respectively ([10th|25th|50th|75th|90th]). Your center’s results are highlighted blue if your center is in the “top” 25th percentile for VQI Overall, and coral if your center is in the “bottom” 25th percentile for VQI Overall.

For details on a particular report, click on the report name in the table of contents on the left.

Legend: Blue = “Top” 25th percentile   Coral = “Bottom” 25th percentile

Note that procedure volume results are not highlighted.
# Carolinas Regional Dashboard

<table>
<thead>
<tr>
<th>Procedure Group</th>
<th>Outcome</th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>Procedure Volume</td>
<td>[12</td>
<td>40</td>
<td>193</td>
</tr>
<tr>
<td>Procedure Volume, All Years</td>
<td>[26</td>
<td>302</td>
<td>1060</td>
<td>2710</td>
</tr>
<tr>
<td>Multiple</td>
<td>Long-Term Follow-up</td>
<td>71.7% [8</td>
<td>62</td>
<td>79</td>
</tr>
<tr>
<td>Discharge Medications</td>
<td>89.6% [83</td>
<td>89</td>
<td>95</td>
<td>98</td>
</tr>
<tr>
<td>TFEM CAS ASYMP</td>
<td>Stroke/Death</td>
<td>0% [0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TFEM CAS SYMP</td>
<td>Stroke/Death</td>
<td>3.6% [0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TCAR ASYMP</td>
<td>Stroke/Death</td>
<td>1% [0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TCAR SYMP</td>
<td>Stroke/Death</td>
<td>4.3% [0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CEA ASYMP</td>
<td>Stroke/Death</td>
<td>0.2% [0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Postop LOS&gt;1 Day</td>
<td>19.4% [11</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>CEA SYMP</td>
<td>Stroke/Death</td>
<td>1.5% [0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Postop LOS&gt;1 Day</td>
<td>41.7% [11</td>
<td>27</td>
<td>34</td>
</tr>
<tr>
<td>EVAR</td>
<td>Postop LOS&gt;2 Days</td>
<td>17% [8</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Sac Diameter Reporting</td>
<td>64.8% [32</td>
<td>57</td>
<td>71</td>
<td>82</td>
</tr>
<tr>
<td>SVS AAA Diameter Guideline</td>
<td>80.1% [58</td>
<td>71</td>
<td>83</td>
<td>91</td>
</tr>
<tr>
<td>TEVAR</td>
<td>Sac Diameter Reporting</td>
<td>49.3% [35</td>
<td>62</td>
<td>74</td>
</tr>
<tr>
<td>OAAA</td>
<td>In-Hospital Mortality</td>
<td>8.2% [0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>SVS Cell-Saver Guideline</td>
<td>90% [64</td>
<td>69</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>SVS Iliac Inflow Guideline</td>
<td>96.8% [92</td>
<td>95</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>PVI CLAUD</td>
<td>ABI/Toe Pressure</td>
<td>87.9% [68</td>
<td>78</td>
<td>88</td>
</tr>
<tr>
<td>INFRA CLTI</td>
<td>Major Complications</td>
<td>4.5% [0</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>SURPRA CLTI</td>
<td>Major Complications</td>
<td>11.6% [0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>LEAMP</td>
<td>Postop Complications</td>
<td>9.7% [3</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>HDA</td>
<td>Primary AVF vs. Graft</td>
<td>76% [74</td>
<td>80</td>
<td>82</td>
</tr>
<tr>
<td>IVCF</td>
<td>Filter Retrieval Reporting</td>
<td>19.5% [10</td>
<td>12</td>
<td>17</td>
</tr>
</tbody>
</table>

Legend: Blue = “Top” 25th percentile  Coral = “Bottom” 25th percentile

Note that procedure volume results are not highlighted.
# About the Appendix

The Region Volume Appendix provides your region's case volumes for each report. In addition, the number of centers with cases contributing to each report is given. Note that columns referencing complete cases are appropriately left blank for non risk-adjusted reports.

<table>
<thead>
<tr>
<th>Report</th>
<th>Included Cases</th>
<th>Centers with Included Cases</th>
<th>Centers with at least 10 Included Cases</th>
<th>Complete Cases</th>
<th>Centers with Complete Cases</th>
<th>Centers with at least 10 Complete Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure Volume</td>
<td>8632</td>
<td>34</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure Volume, All Years</td>
<td>666,289</td>
<td>35</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-Term Follow-up</td>
<td>8006</td>
<td>27</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discharge Medications</td>
<td>7653</td>
<td>33</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TFEM CAS ASYMP: Stroke/Death</td>
<td>119</td>
<td>14</td>
<td>2</td>
<td>93</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>TFEM CAS SYMP: Stroke/Death</td>
<td>111</td>
<td>13</td>
<td>5</td>
<td>98</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>TCAR ASYMP: Stroke/Death</td>
<td>311</td>
<td>24</td>
<td>12</td>
<td>308</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>TCAR SYMP: Stroke/Death</td>
<td>185</td>
<td>20</td>
<td>8</td>
<td>180</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>CEA ASYMP: Stroke/Death</td>
<td>865</td>
<td>21</td>
<td>20</td>
<td>831</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td>CEA ASYMP: Postop LOS&gt;1 Day</td>
<td>867</td>
<td>21</td>
<td>20</td>
<td>832</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td>CEA SYMP: Stroke/Death</td>
<td>405</td>
<td>21</td>
<td>14</td>
<td>389</td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td>CEA SYMP: Postop LOS&gt;1 Day</td>
<td>405</td>
<td>21</td>
<td>14</td>
<td>389</td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td>EVAR: Postop LOS&gt;2 Days</td>
<td>575</td>
<td>17</td>
<td>16</td>
<td>524</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>EVAR: Sac Diameter Reporting</td>
<td>608</td>
<td>17</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVAR: SVS AAA Diameter Guideline</td>
<td>507</td>
<td>17</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEVAR: Sac Diameter Reporting</td>
<td>140</td>
<td>8</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OAAA: In-Hospital Mortality</td>
<td>196</td>
<td>12</td>
<td>9</td>
<td>153</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>OAAA: SVS Cell-Saver Guideline</td>
<td>180</td>
<td>11</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OAAA: SVS Iliac Inflow Guideline</td>
<td>187</td>
<td>12</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PVI CLAUD: ABI/Toe Pressure</td>
<td>1149</td>
<td>16</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INFRA CLTI: Major Complications</td>
<td>661</td>
<td>16</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPRA CLTI: Major Complications</td>
<td>112</td>
<td>12</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEAMP: Postop Complications</td>
<td>401</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDA: Primary AVF vs. Graft</td>
<td>263</td>
<td>5</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IVCF: Filter Retrieval Reporting</td>
<td>123</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Procedure Volume

Procedures performed between January 1 and December 31, 2021

Number of cases entered into the VQI, by registry and overall

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Your Center (N)</th>
<th>Your Region (N)</th>
<th>VQI Overall (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS (TFEM CAS &amp; TCAR)</td>
<td>880</td>
<td>15409</td>
<td></td>
</tr>
<tr>
<td>CEA</td>
<td>1501</td>
<td>17679</td>
<td></td>
</tr>
<tr>
<td>EVAR</td>
<td>613</td>
<td>7653</td>
<td></td>
</tr>
<tr>
<td>HDA</td>
<td>355</td>
<td>5978</td>
<td></td>
</tr>
<tr>
<td>INFRA</td>
<td>812</td>
<td>6789</td>
<td></td>
</tr>
<tr>
<td>IVCF</td>
<td>NA (&lt;3 centers)</td>
<td>1322</td>
<td></td>
</tr>
<tr>
<td>LEAMP</td>
<td>402</td>
<td>3085</td>
<td></td>
</tr>
<tr>
<td>OAAA</td>
<td>61</td>
<td>1283</td>
<td></td>
</tr>
<tr>
<td>PVI</td>
<td>3515</td>
<td>43995</td>
<td></td>
</tr>
<tr>
<td>SUPRA</td>
<td>190</td>
<td>1870</td>
<td></td>
</tr>
<tr>
<td>TEVAR</td>
<td>275</td>
<td>3163</td>
<td></td>
</tr>
<tr>
<td>Varicose Veins</td>
<td>NA (&lt;3 centers)</td>
<td>5991</td>
<td></td>
</tr>
<tr>
<td>Overall (Jan-Dec 2021)</td>
<td>8632</td>
<td>114217</td>
<td></td>
</tr>
<tr>
<td>Overall (Jan-Dec 2020)</td>
<td>8091</td>
<td>111113</td>
<td></td>
</tr>
</tbody>
</table>
# Procedure Volume, All Years

Includes all procedures with procedure date through December 31, 2021

Number of cases entered into the VQI, by registry and overall

<table>
<thead>
<tr>
<th>Service</th>
<th>Your Center (N)</th>
<th>Your Region (N)</th>
<th>VQI Overall (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS (TFEM CAS &amp; TCAR)</td>
<td>4179</td>
<td>66792</td>
<td></td>
</tr>
<tr>
<td>CEA</td>
<td>14432</td>
<td>167675</td>
<td></td>
</tr>
<tr>
<td>EVAR</td>
<td>6391</td>
<td>67929</td>
<td></td>
</tr>
<tr>
<td>HDA</td>
<td>2249</td>
<td>66228</td>
<td></td>
</tr>
<tr>
<td>INFRA</td>
<td>7723</td>
<td>70209</td>
<td></td>
</tr>
<tr>
<td>IVCF</td>
<td>1097</td>
<td>16522</td>
<td></td>
</tr>
<tr>
<td>LEAMP</td>
<td>2835</td>
<td>23123</td>
<td></td>
</tr>
<tr>
<td>OAAA</td>
<td>902</td>
<td>15617</td>
<td></td>
</tr>
<tr>
<td>PVI</td>
<td>22639</td>
<td>299452</td>
<td></td>
</tr>
<tr>
<td>SUPRA</td>
<td>2298</td>
<td>22545</td>
<td></td>
</tr>
<tr>
<td>TEVAR</td>
<td>1883</td>
<td>22625</td>
<td></td>
</tr>
<tr>
<td>Varicose Veins</td>
<td>NA (&lt;3 centers)</td>
<td></td>
<td>50680</td>
</tr>
<tr>
<td>Overall</td>
<td>66628</td>
<td></td>
<td>889397</td>
</tr>
</tbody>
</table>
Procedure Volume by Center in Your Region (Through Dec 2021)

Centers (centers with <10 cases not shown)

35 of 35 centers displayed

Procedure Volume Across VQI (Through Dec 2021)

Regions (regions with <3 centers with at least 10 cases not shown)

“Others” indicates centers that do not belong to a regional group.
Physician Specialties

Physician Specialties Across VQI (as of January 31, 2022, N=5849 Physicians)
Long-Term Follow-up

Procedures performed between January 1 and December 31, 2019

Includes CAS (TFEM CAS and TCAR), CEA, EVAR, HDA, INFRA, IVCF, LEAMP, OAAA, PVI, SUPRA, and TEVAR procedures only. Excludes procedures not eligible for long-term follow-up.

The table below gives the number of procedures meeting the inclusion criteria, and the percentage of those procedures with follow-up recorded between 9 and 21 months post-procedure.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS</td>
<td>749 (65%)</td>
<td>11358 (66%)</td>
<td></td>
</tr>
<tr>
<td>CEA</td>
<td>1535 (75%)</td>
<td>19463 (73%)</td>
<td></td>
</tr>
<tr>
<td>EVAR</td>
<td>660 (77%)</td>
<td>7711 (72%)</td>
<td></td>
</tr>
<tr>
<td>HDA</td>
<td>363 (62%)</td>
<td>8378 (69%)</td>
<td></td>
</tr>
<tr>
<td>INFRA</td>
<td>719 (73%)</td>
<td>7383 (74%)</td>
<td></td>
</tr>
<tr>
<td>IVCF</td>
<td>153 (39%)</td>
<td>1887 (76%)</td>
<td></td>
</tr>
<tr>
<td>LEAMP</td>
<td>376 (56%)</td>
<td>3199 (72%)</td>
<td></td>
</tr>
<tr>
<td>OAAA</td>
<td>48 (67%)</td>
<td>1250 (74%)</td>
<td></td>
</tr>
<tr>
<td>PVI</td>
<td>2954 (77%)</td>
<td>40101 (71%)</td>
<td></td>
</tr>
<tr>
<td>SUPRA</td>
<td>183 (67%)</td>
<td>2269 (73%)</td>
<td></td>
</tr>
<tr>
<td>TEVAR</td>
<td>266 (59%)</td>
<td>2961 (68%)</td>
<td></td>
</tr>
<tr>
<td>Overall (Jan-Dec 2019)</td>
<td>8006 (72%)</td>
<td>105960 (71%)</td>
<td></td>
</tr>
<tr>
<td>Overall (Jan-Dec 2018)</td>
<td>7167 (69%)</td>
<td>95242 (73%)</td>
<td></td>
</tr>
</tbody>
</table>
Long-Term Follow-Up by Center in Your Region (Jan-Dec 2019)

- Other centers in your region
- Your center

Centers (centers with <10 cases not shown)

26 of 27 centers displayed

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

Long-Term Follow-Up by Region Across VQI (Jan-Dec 2019)

Regions (regions with <3 centers with at least 10 cases not shown)

***" indicates region’s rate differs significantly from the VQI rate.

“Others” indicates centers that do not belong to a regional group.
Discharge Medications

Procedures performed between January 1 and December 31, 2021

Includes CAS (TFEM CAS and TCAR), CEA, EVAR, INFRA, LEAMP, OAAA, PVI, SUPRA, and TEVAR procedures only. Antiplatelet is defined as ASA or P2Y12 inhibitor. Cases are excluded if (1) Discharge Statin = “No, for medical reason” OR (2) Both Discharge ASA = “No, for medical reason” AND Discharge P2Y12 inhibitor = “No, for medical reason” OR (3) An in-hospital death occurred.

The table below gives the number of procedures meeting the inclusion criteria, and the percentage of those procedures where patients received discharge medications.

<table>
<thead>
<tr>
<th></th>
<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>CAS</td>
<td>7653</td>
<td>90%</td>
<td>6%</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td>CEA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INFRA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEAMP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OAAA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PVI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPRA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEVAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your Center Overall</td>
<td>94988</td>
<td>86%</td>
<td>9%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Your Region Overall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VQI Overall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Discharge Antiplatelet+Statin by Center in Your Region (Jan-Dec 2021)

- Other centers in your region
- Your center

30 of 33 centers displayed
*** indicates center’s rate differs significantly from the regional rate.

Discharge Antiplatelet+Statin by Region Across VQI (Jan-Dec 2021)

Regions (regions with <3 centers with at least 10 cases not shown)
*** indicates region’s rate differs significantly from the VQI rate.
TFEM CAS ASYMP: Stroke/Death

Procedures performed between January 1 and December 31, 2021

Includes Transfemoral Carotid Artery Stenting (TFEM CAS) procedures performed on asymptomatic patients. Asymptomatic patients are patients with no ipsilateral or contralateral retinal or cortical TIA or stroke within 180 days prior to surgery. Includes procedures utilizing a femoral, brachial, or radial approach. Excludes any patient with prior vertebrobasilar TIA or stroke, prior ipsilateral CAS, CAS for intracranial treatment, or any procedure involving dissection, trauma, FMD, or “Other” lesion types. Procedures with an approach other than femoral, brachial, or radial are also excluded.

The table below gives the number of TFEM CAS procedures (performed on asymptomatic patients) meeting the inclusion criteria, 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 TFEM CAS procedures meeting inclusion criteria</td>
<td>119</td>
<td>2334</td>
<td></td>
</tr>
<tr>
<td>Observed rate of stroke or death among procedures meeting inclusion criteria</td>
<td>0%</td>
<td>1.7%</td>
<td></td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>93</td>
<td>2125</td>
<td></td>
</tr>
<tr>
<td>Observed rate of stroke or death among cases with complete data</td>
<td>0%</td>
<td>1.6%</td>
<td></td>
</tr>
<tr>
<td>Expected rate of stroke or death among cases with complete data</td>
<td>1.3%</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>0.63</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.
Stroke or Death after TFEM CAS for Asymptomatic Patients by Year

Rates shown are observed rates among cases meeting inclusion criteria.
TFEM CAS SYMP: Stroke/Death

Procedures performed between January 1 and December 31, 2021

Includes Transfemoral Carotid Artery Stenting (TFEM CAS) procedures performed on symptomatic patients. Symptomatic patients are patients with an ipsilateral or contralateral retinal or cortical TIA or stroke within 180 days prior to surgery. Includes procedures utilizing a femoral, brachial, or radial approach. Excludes any patient with prior vertebrobasilar TIA or stroke, prior ipsilateral CAS, CAS for intracranial treatment, or any procedure involving dissection, trauma, FMD, or “Other” lesion types. Procedures with an approach other than femoral, brachial, or radial are also excluded.

The table below gives the number of TFEM CAS procedures (performed on symptomatic patients) meeting the inclusion criteria, and the observed and expected rates of in-hospital stroke or death for those cases.

<table>
<thead>
<tr>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of TFEM CAS procedures meeting inclusion criteria</td>
<td>111</td>
<td>2316</td>
</tr>
<tr>
<td>Observed rate of stroke or death among procedures meeting inclusion criteria</td>
<td>3.6%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>98</td>
<td>2135</td>
</tr>
<tr>
<td>Observed rate of stroke or death among cases with complete data</td>
<td>4.1%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Expected rate of stroke or death among cases with complete data</td>
<td>4.5%</td>
<td>NA</td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>1</td>
<td>NA</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.
Stroke or Death after TFEM CAS for Symptomatic Patients by Year

Rates shown are observed rates among cases meeting inclusion criteria.
Stroke or Death after TFEM CAS for Symptomatic Patients in Your Region (Jan-Dec 2021)

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

Centers (centers with <10 complete cases not shown)

5 of 13 centers displayed

Rates shown are among complete cases. "***" indicates center's observed rate differs significantly from its expected rate.

Stroke or Death after TFEM CAS for Symptomatic Patients by Region Across VQI (Jan-Dec 2021)

- Observed
- Expected

Regions (regions with <3 centers with at least 10 complete cases not shown)

Rates shown are among complete cases. "***" indicates region's observed rate differs significantly from its expected rate.
TCAR ASYMP: Stroke/Death

Procedures performed between January 1 and December 31, 2021

Includes TransCarotid Artery Revascularization (TCAR) procedures performed on asymptomatic patients. Asymptomatic patients are patients with no ipsilateral or contralateral retinal or cortical TIA or stroke within 180 days prior to surgery. Excludes any patient with prior vertebrobasilar TIA or stroke, prior ipsilateral CAS, CAS for intracranial treatment, or any procedure involving dissection, trauma, FMD, or “Other” lesion types. Procedures with an approach other than carotid percutaneous or carotid open are also excluded.

The table below gives the number of TCAR procedures (performed on asymptomatic patients) meeting the inclusion criteria, 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 TCAR procedures meeting inclusion criteria</td>
<td>311</td>
<td>5108</td>
<td></td>
</tr>
<tr>
<td>Observed rate of stroke or death among procedures meeting inclusion criteria</td>
<td>1%</td>
<td>1.3%</td>
<td></td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>308</td>
<td>4840</td>
<td></td>
</tr>
<tr>
<td>Observed rate of stroke or death among cases with complete data</td>
<td>1%</td>
<td>1.2%</td>
<td></td>
</tr>
<tr>
<td>Expected rate of stroke or death among cases with complete data</td>
<td>1.2%</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>1</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.
Stroke or Death after TCAR for Asymptomatic Patients by Year

Rates shown are observed rates among cases meeting inclusion criteria.
TCAR SYMP: Stroke/Death

Procedures performed between January 1 and December 31, 2021

Includes TransCarotid Artery Revascularization (TCAR) procedures performed on symptomatic patients. Symptomatic patients are patients with an ipsilateral or contralateral retinal or cortical TIA or stroke within 180 days prior to surgery. Excludes any patient with prior vertebrobasilar TIA or stroke, prior ipsilateral CAS, CAS for intracranial treatment, or any procedure involving dissection, trauma, FMD, or “Other” lesion types. Procedures with an approach other than carotid percutaneous or carotid open are also excluded.

The table below gives the number of TCAR procedures (performed on symptomatic patients) meeting the inclusion criteria, 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 TCAR procedures meeting inclusion criteria</td>
<td>185</td>
<td>2611</td>
<td></td>
</tr>
<tr>
<td>Observed rate of stroke or death among procedures meeting inclusion criteria</td>
<td>4.3%</td>
<td>2.6%</td>
<td></td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>180</td>
<td>2498</td>
<td></td>
</tr>
<tr>
<td>Observed rate of stroke or death among cases with complete data</td>
<td>4.4%</td>
<td>2.6%</td>
<td></td>
</tr>
<tr>
<td>Expected rate of stroke or death among cases with complete data</td>
<td>2.7%</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>0.16</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.
Stroke or Death after TCAR for Symptomatic Patients by Year

Rates shown are observed rates among cases meeting inclusion criteria.
Stroke or Death after TCAR for Symptomatic Patients in Your Region (Jan-Dec 2021)

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

Centers (centers with <10 complete cases not shown)

8 of 20 centers displayed

Rates shown are among complete cases. *** Indicates center's observed rate differs significantly from its expected rate.

Stroke or Death after TCAR for Symptomatic Patients by Region Across VQI (Jan-Dec 2021)

- Observed
- Expected

Regions (regions with <3 centers with at least 10 complete cases not shown)

Rates shown are among complete cases. *** Indicates region's observed rate differs significantly from its expected rate.
CEA ASYMP: Stroke/Death

Procedures performed between January 1 and December 31, 2021

Includes Carotid Endarterectomy (CEA) procedures performed on asymptomatic patients. Asymptomatic patients are patients with no ipsilateral retinal or cortical TIA or stroke within 180 days prior to surgery. Excludes any patient with prior vertebrobasilar or non-specific TIA or stroke, prior ipsilateral CEA or CAS, or any procedure with a concomitant CABG, proximal endovascular, distal endovascular, or “Other” arterial procedure.

The table below gives the number of CEA procedures (performed on asymptomatic patients) meeting the inclusion criteria, 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>865</td>
<td></td>
<td>10107</td>
</tr>
<tr>
<td>Observed rate of stroke or death among procedures meeting inclusion criteria</td>
<td>0.2%</td>
<td>0.9%</td>
<td></td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>831</td>
<td></td>
<td>9627</td>
</tr>
<tr>
<td>Observed rate of stroke or death among cases with complete data</td>
<td>0.2%</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Expected rate of stroke or death among cases with complete data</td>
<td>0.8%</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>0.08</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.
Stroke or Death after CEA for Asymptomatic Patients by Year

Rates shown are observed rates among cases meeting inclusion criteria.
Stroke or Death after CEA for Asymptomatic Patients in Your Region (Jan-Dec 2021)

Centers (centers with <10 complete cases not shown)

Rates shown are among complete cases. "***" indicates center’s observed rate differs significantly from its expected rate.

Stroke or Death after CEA for Asymptomatic Patients by Region Across VQI (Jan-Dec 2021)

Regions (regions with <3 centers with at least 10 complete cases not shown)

Rates shown are among complete cases. "***" indicates region’s observed rate differs significantly from its expected rate.
CEA SYMP: Stroke/Death

Procedures performed between January 1 and December 31, 2021

Includes Carotid Endarterectomy (CEA) procedures performed on symptomatic patients. Symptomatic patients are patients with an ipsilateral retinal or cortical TIA or stroke within 180 days prior to surgery. Excludes any patient with prior vertebrobasilar or non-specific TIA or stroke, prior ipsilateral CEA or CAS, or any procedure with a concomitant CABG, proximal endovascular, distal endovascular, or “Other” arterial procedure.

The table below gives the number of CEA procedures (performed on symptomatic patients) meeting the inclusion criteria, 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>405</td>
<td>5069</td>
<td></td>
</tr>
<tr>
<td>Observed rate of stroke or death among procedures meeting inclusion criteria</td>
<td>1.5%</td>
<td>2.2%</td>
<td></td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>389</td>
<td>4888</td>
<td></td>
</tr>
<tr>
<td>Observed rate of stroke or death among cases with complete data</td>
<td>1.5%</td>
<td>2.2%</td>
<td></td>
</tr>
<tr>
<td>Expected rate of stroke or death among cases with complete data</td>
<td>2.1%</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>0.59</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.
Stroke or Death after CEA for Symptomatic Patients by Year

Rates shown are observed rates among cases meeting inclusion criteria.
CEA ASYMP: Postop LOS>1 Day

Procedures performed between January 1 and December 31, 2021

Includes Carotid Endarterectomy (CEA) procedures performed on asymptomatic patients. Asymptomatic patients are patients with no ipsilateral retinal or cortical TIA or stroke within 180 days prior to surgery. Excludes any patient with prior vertebrobasilar or non-specific TIA or stroke, prior ipsilateral CEA or CAS, or any procedure with a concomitant CABG, proximal endovascular, distal endovascular, or “Other” arterial procedure. Procedures where in-hospital death occurred with postoperative LOS<1 day are also excluded. Postoperative LOS is based on the midnight rule used for hospital billing.

The table below gives the number of CEA procedures (performed on asymptomatic patients) meeting the inclusion criteria, and the observed and expected rates of postoperative LOS>1 Day 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>867</td>
<td>10111</td>
<td></td>
</tr>
<tr>
<td>Observed rate of LOS&gt;1 day among procedures meeting inclusion criteria</td>
<td>19.4%</td>
<td>21.7%</td>
<td></td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>832</td>
<td>9628</td>
<td></td>
</tr>
<tr>
<td>Observed rate of LOS&gt;1 day among cases with complete data</td>
<td>18.6%</td>
<td>21.6%</td>
<td></td>
</tr>
<tr>
<td>Expected rate of LOS&gt;1 day among cases with complete data</td>
<td>20.8%</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>0.12</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.
Postop LOS>1 Day after CEA for Asymptomatic Patients by Year

Rates shown are observed rates among cases meeting inclusion criteria.
Postop LOS > 1 Day after CEA for Asymptomatic Patients in Your Region (Jan-Dec 2021)

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

Centers (centers with <10 complete cases not shown)

20 of 21 centers displayed

Rates shown are among complete cases. *** Indicates center's observed rate differs significantly from its expected rate.

Postop LOS > 1 Day after CEA for Asymptomatic Patients by Region Across VQI (Jan-Dec 2021)

- Observed
- Expected

Regions (regions with <3 centers with at least 10 complete cases not shown)

Rates shown are among complete cases. *** Indicates region's observed rate differs significantly from its expected rate.
CEA SYMP: Postop LOS>1 Day

Procedures performed between January 1 and December 31, 2021

Includes Carotid Endarterectomy (CEA) procedures performed on symptomatic patients. Symptomatic patients are patients with an ipsilateral retinal or cortical TIA or stroke within 180 days prior to surgery. Excludes any patient with prior vertebrobasilar or non-specific TIA or stroke, prior ipsilateral CEA or CAS, or any procedure with a concomitant CABG, proximal endovascular, distal endovascular, or “Other” arterial procedure. Procedures where in-hospital death occurred with postoperative LOS≤1 day are also excluded. Postoperative LOS is based on the midnight rule used for hospital billing.

The table below gives the number of CEA procedures (performed on symptomatic patients) meeting the inclusion criteria, and the observed and expected rates of postoperative LOS>1 Day for those cases.

<table>
<thead>
<tr>
<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>405</td>
<td>5069</td>
</tr>
<tr>
<td>Observed rate of LOS&gt;1 day among procedures meeting inclusion criteria</td>
<td>41.7%</td>
<td>40.8%</td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>389</td>
<td>4888</td>
</tr>
<tr>
<td>Observed rate of LOS&gt;1 day among cases with complete data</td>
<td>42.2%</td>
<td>40.9%</td>
</tr>
<tr>
<td>Expected rate of LOS&gt;1 day among cases with complete data</td>
<td>42.3%</td>
<td>NA</td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>1</td>
<td>NA</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.**
Postop LOS > 1 Day after CEA for Symptomatic Patients by Year

Rates shown are observed rates among cases meeting inclusion criteria.
Postop LOS>1 Day after CEA for Symptomatic Patients in Your Region (Jan-Dec 2021)

Other centers in your region • Your center
Observed • Expected

Centers (centers with <10 complete cases not shown)

14 of 21 centers displayed
Rates shown are among complete cases. "***" Indicates center's observed rate differs significantly from its expected rate

Postop LOS>1 Day after CEA for Symptomatic Patients by Region Across VQI
(Jan-Dec 2021)

Observed • Expected

Regions (regions with <3 centers with at least 10 complete cases not shown)

Rates shown are among complete cases. "***" Indicates region's observed rate differs significantly from its expected rate
EVAR: Postop LOS>2 Days

Procedures performed between January 1 and December 31, 2021
Includes Endovascular AAA Repair (EVAR) procedures. Excludes any procedure with ruptured aneurysm. Procedures where in-hospital death occurred with postoperative LOS≤2 days are also excluded. Postoperative LOS is based on the midnight rule used for hospital billing.

The table below gives the number of EVAR procedures meeting the inclusion criteria, and the observed and expected rates of postoperative LOS>2 Days 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 EVAR procedures meeting inclusion criteria</td>
<td>575</td>
<td>7138</td>
<td></td>
</tr>
<tr>
<td>Observed rate of LOS&gt;2 days among procedures meeting inclusion criteria</td>
<td>17%</td>
<td>16.7%</td>
<td></td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>524</td>
<td>6628</td>
<td></td>
</tr>
<tr>
<td>Observed rate of LOS&gt;2 days among cases with complete data</td>
<td>16.8%</td>
<td>16.7%</td>
<td></td>
</tr>
<tr>
<td>Expected rate of LOS&gt;2 days among cases with complete data</td>
<td>16.1%</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>0.63</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.
EVAR: Sac Diameter Reporting

Procedures performed between January 1 and December 31, 2019

Includes Endovascular AAA Repair (EVAR) procedures. Excludes patients who were converted to open or died within 21 months of surgery.

The table below gives the number of EVAR procedures meeting the inclusion criteria, and the percentage of those procedures where a sac diameter was reported between 9 and 21 months post-procedure.

<table>
<thead>
<tr>
<th>Metric</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></td>
<td>608</td>
<td>7112</td>
</tr>
<tr>
<td>Percentage with sac diameter reported between 9 and 21 months post-procedure</td>
<td></td>
<td>64.8%</td>
<td>58%</td>
</tr>
</tbody>
</table>
EVAR Sac Diameter Reporting in Your Region (Jan-Dec 2019)

Other centers in your region  Your center

EVAR Sac Diameter Reporting Unblinding Legend for Your Region

<table>
<thead>
<tr>
<th>Index</th>
<th>Medical Center Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Novant Health Presbyterian Medical Center</td>
</tr>
<tr>
<td>2</td>
<td>Novant Health Forsyth Medical Center</td>
</tr>
<tr>
<td>3</td>
<td>Prisma Health Richland</td>
</tr>
<tr>
<td>4</td>
<td>Mission Hospital</td>
</tr>
<tr>
<td>5</td>
<td>McLeod Regional Medical Center</td>
</tr>
<tr>
<td>6</td>
<td>WakeMed Health &amp; Hospitals-Raleigh Campus</td>
</tr>
<tr>
<td>7</td>
<td>Sanger Heart and Vascular Institute</td>
</tr>
<tr>
<td>8</td>
<td>Vidant Medical Center</td>
</tr>
<tr>
<td>9</td>
<td>Wake Forest University Baptist Health Medical Center</td>
</tr>
<tr>
<td>10</td>
<td>Alamance Regional Medical Center</td>
</tr>
<tr>
<td>11</td>
<td>Self Regional Health</td>
</tr>
<tr>
<td>12</td>
<td>Roper St. Francis</td>
</tr>
<tr>
<td>13</td>
<td>Spartanburg Regional</td>
</tr>
<tr>
<td>14</td>
<td>Cone Health</td>
</tr>
<tr>
<td>15</td>
<td>Medical University Hospital Authority</td>
</tr>
</tbody>
</table>

15 of 17 centers displayed

** Indicates center's rate differs significantly from the regional rate.
EVAR Sac Diameter Reporting by Region Across VQI (Jan-Dec 2019)

Regions (regions with <3 centers with at least 10 cases not shown)

*** Indicates region’s rate differs significantly from the VQI rate.
EVAR: SVS AAA Diameter Guideline

Procedures performed between January 1 and December 31, 2021

Includes Endovascular AAA Repair (EVAR) procedures. Excludes any non-elective procedure. SVS AAA diameter guideline is ≥5 cm for Women and ≥5.5cm for men. If the patient has any iliac aneurysm, the guideline is considered met regardless of AAA diameter.

The table below gives the number of EVAR procedures meeting the inclusion criteria, and the percentage of those procedures meeting the SVS AAA diameter guideline.

<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></td>
<td>507</td>
<td>6335</td>
</tr>
<tr>
<td>Percentage meeting SVS AAA diameter guideline</td>
<td></td>
<td>80.1%</td>
<td>75.3%</td>
</tr>
</tbody>
</table>
**EVAR SVS AAA Diameter Guideline in Your Region (Jan-Dec 2021)**

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

15 of 17 centers displayed

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

**EVAR SVS AAA Diameter Guideline by Region Across VQI (Jan-Dec 2021)**

- **Regions (regions with <3 centers with at least 10 cases not shown)**

*** Indicates region’s rate differs significantly from the VQI rate.
TEVAR: Sac Diameter Reporting

Procedures performed between January 1 and December 31, 2019

Includes Thoracic Endovascular Aortic Repair (TEVAR) procedures for aneurysm or aneurysm from dissection. Excludes procedures where no aortic device was implanted or patients who were converted to open or died within 21 months of surgery.

The table below gives the number of TEVAR procedures meeting the inclusion criteria, and the percentage of those procedures where a sac diameter was reported between 9 and 21 months post-procedure.

<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 meeting inclusion criteria</td>
<td>140</td>
<td>1703</td>
<td></td>
</tr>
<tr>
<td>Percentage with sac diameter reported between 9 and 21 months post-procedure</td>
<td>49.3%</td>
<td>59.3%</td>
<td></td>
</tr>
</tbody>
</table>
TEVAR Sac Diameter Reporting in Your Region (Jan-Dec 2019)

- Other centers in your region
- Your center

Centers (centers with <10 cases not shown)

3 of 5 centers displayed

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

TEVAR Sac Diameter Reporting by Region Across VQI (Jan-Dec 2019)

Regions (regions with <3 centers with at least 10 cases not shown)

*** Indicates region’s rate differs significantly from the VQI rate.
OAAA: In-Hospital Mortality

Procedures performed between January 1, 2018 and December 31, 2021
Includes Open AAA (OAAA) procedures. Excludes any patient with a ruptured aneurysm.

The table below gives the number of OAAA procedures meeting the inclusion criteria, and the observed and expected rates of in-hospital 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 OAAA procedures meeting inclusion criteria</td>
<td>196</td>
<td></td>
<td>4503</td>
</tr>
<tr>
<td>Observed rate of In-Hospital Mortality among procedures meeting inclusion criteria</td>
<td>8.2%</td>
<td>4.2%</td>
<td></td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>153</td>
<td></td>
<td>4201</td>
</tr>
<tr>
<td>Observed rate of In-Hospital Mortality among cases with complete data</td>
<td>7.2%</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Expected rate of In-Hospital Mortality among cases with complete data</td>
<td>4.1%</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>0.06</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.
In-Hospital Death after OAAA by Year

Rates shown are observed rates among cases meeting inclusion criteria.
OAAA: SVS Cell-Saver Guideline

Procedures performed between January 1, 2018 and December 31, 2021
Includes Open AAA (OAAA) procedures. Excludes any patient with EBL≤500 ml. SVS cell-saver guideline is met if cell salvage or ultrafiltration device was used.

The table below gives the number of OAAA procedures meeting the inclusion criteria, and the percentage of those procedures meeting the SVS cell-saver guideline.

<table>
<thead>
<tr>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of OAAA procedures meeting inclusion criteria</td>
<td>180</td>
<td>4576</td>
</tr>
<tr>
<td>Percentage meeting SVS cell-saver guideline</td>
<td>90%</td>
<td>92.4%</td>
</tr>
</tbody>
</table>
OAAA Cell-Saver Guideline in Your Region (Jan 2018-Dec 2021)

Other centers in your region

Your center

Centers (centers with <10 cases not shown)

8 of 11 centers displayed

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

OAAA Cell-Saver Guideline by Region Across VQI (Jan 2018-Dec 2021)

Regions (regions with <3 centers with at least 10 cases not shown)

*** indicates region's rate differs significantly from the VQI rate.
OAAA: SVS Iliac Inflow Guideline

Procedures performed between January 1, 2018 and December 31, 2021
Includes Open AAA (OAAA) procedures. SVS iliac inflow guideline is met if preservation of flow was maintained to at least one internal iliac artery.

The table below gives the number of OAAA procedures meeting the inclusion criteria, and the percentage of those procedures meeting the SVS iliac inflow guideline.

<table>
<thead>
<tr>
<th></th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of OAAA procedures meeting inclusion criteria</td>
<td>187</td>
<td>5134</td>
<td></td>
</tr>
<tr>
<td>Percentage meeting SVS iliac inflow guideline</td>
<td>96.8%</td>
<td>97.6%</td>
<td></td>
</tr>
</tbody>
</table>
OAAA Iliac Inflow Guideline in Your Region (Jan 2018-Dec 2021)

Other centers in your region
Your center

Centers (centers with <10 cases not shown)

7 of 12 centers displayed
*** Indicates center's rate differs significantly from the regional rate.

OAAA Iliac Inflow Guideline by Region Across VQI (Jan 2018-Dec 2021)

Regions (regions with <3 centers with at least 10 cases not shown)

*** Indicates region's rate differs significantly from the VQI rate.
# PVI CLAUD: ABI/Toe Pressure

Procedures performed between January 1 and December 31, 2021

Includes Peripheral Vascular Intervention (PVI) procedures for mild, moderate, or severe claudication. “ABI/Toe Pressure Assessment” indicates at least one ABI or toe pressure assessment was made prior to PVI for the side of the procedure, or on both sides for bilateral and aortic procedures.

The table below gives the number of PVI procedures meeting the inclusion criteria, and the percentage of those procedures in which an ABI or toe pressure was assessed prior to PVI.

<table>
<thead>
<tr>
<th></th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of PVI procedures meeting inclusion criteria</td>
<td>1149</td>
<td>14657</td>
<td></td>
</tr>
<tr>
<td>Percentage with ABI/toe pressure assessment</td>
<td>87.9%</td>
<td>74.8%</td>
<td></td>
</tr>
</tbody>
</table>
ABI/Toe Pressure Assessment before PVI for Claudication in Your Region (Jan-Dec 2021)

Other centers in your region  Your center

Centers (centers with <10 cases not shown)

14 of 16 centers displayed
*** Indicates center’s rate differs significantly from the regional rate.

ABI/Toe Pressure Assessment before PVI for Claudication by Region Across VQI (Jan-Dec 2021)

Regions (regions with <3 centers with at least 10 cases not shown)

*** Indicates region’s rate differs significantly from the VQI rate.
INFRA CLTI: Major Complications

Procedures performed between January 1 and December 31, 2021

Includes Infrainguinal Bypass (INFRA) procedures for rest pain, tissue loss, or acute ischemia. Major complications are defined as in-hospital death, ipsilateral BK or AK amputation, or graft occlusion.

The table below gives the number of INFRA procedures meeting the inclusion criteria, and the percentage of those procedures that resulted in in-hospital death, ipsilateral BK or AK amputation, or graft occlusion.

<table>
<thead>
<tr>
<th></th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of INFRA procedures meeting inclusion criteria</td>
<td></td>
<td>661</td>
<td>5187</td>
</tr>
<tr>
<td>Percentage with major complications</td>
<td></td>
<td>4.5%</td>
<td>4.9%</td>
</tr>
</tbody>
</table>
Major Complications after INFRA for CLTI by Year

- 2018
- 2019
- 2020
- 2021

Your Center, Your Region, VQI Overall
Major Complications after INFRA for CLTI in Your Region (Jan-Dec 2021)

- Other centers in your region
- Your center

Centers (centers with <10 cases not shown)

15 of 16 centers displayed

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

Major Complications after INFRA for CLTI by Region Across VQI (Jan-Dec 2021)

Regions (regions with <3 centers with at least 10 cases not shown)

*** Indicates region's rate differs significantly from the VQI rate.
SUPRA CLTI: Major Complications

Procedures performed between January 1 and December 31, 2021

Includes Suprainguinal Bypass (SUPRA) procedures for rest pain, tissue loss, or acute ischemia. Major complications are defined as in-hospital death, ipsilateral BK or AK amputation, or graft occlusion.

The table below gives the number of SUPRA procedures meeting the inclusion criteria, and the percentage of those procedures that resulted in in-hospital death, ipsilateral BK or AK amputation, or graft occlusion.

<table>
<thead>
<tr>
<th></th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of SUPRA procedures meeting inclusion criteria</td>
<td></td>
<td>112</td>
<td>1162</td>
</tr>
<tr>
<td>Percentage with major complications</td>
<td></td>
<td>11.6%</td>
<td>8.1%</td>
</tr>
</tbody>
</table>
Major Complications after SUPRA for CLTI by Year

- Your Center
- Your Region
- VQI Overall
Major Complications after SUPRA for CLTI in Your Region (Jan-Dec 2021)

- Other centers in your region
- Your center

Centers (centers with <10 cases not shown)

5 of 12 centers displayed

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

Major Complications after SUPRA for CLTI by Region Across VQI (Jan-Dec 2021)

- Canada
- Midwest
- Mid-Atlantic
- Virginia
- VCI
- G. Lakes
- Southeast
- MidSouth
- Cardinals
- New England

Regions (regions with <3 centers with at least 10 cases not shown)

*** Indicates region’s rate differs significantly from the VQI rate.
LEAMP: Postop Complications

Procedures performed between January 1 and December 31, 2021

Includes Lower-Extremity Amputation (LEAMP) procedures. Postoperative complications are defined as myocardial infarction, dysrhythmia, congestive heart failure, surgical site infection, renal complication, or respiratory complication.

The table below gives the number of LEAMP procedures meeting the inclusion criteria, and the percentage of those procedures that resulted in a postoperative complication.

<table>
<thead>
<tr>
<th></th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of LEAMP procedures meeting inclusion criteria</td>
<td></td>
<td>401</td>
<td>3080</td>
</tr>
<tr>
<td>Percentage with postoperative complications</td>
<td></td>
<td>9.7%</td>
<td>11.7%</td>
</tr>
</tbody>
</table>
Postop Complications after LEAMP in Your Region (Jan-Dec 2021)

- Other centers in your region
- Your center

Centers (centers with <10 cases not shown)

4 of 4 centers displayed
*** indicates center's rate differs significantly from the regional rate.

Postop Complications after LEAMP by Region Across VQI (Jan-Dec 2021)

Regions (regions with <3 centers with at least 10 cases not shown)

*** indicates region's rate differs significantly from the VQI rate.
# HDA: Primary AVF vs. Graft

Procedures performed between January 1 and December 31, 2021

Includes Hemodialysis Access (HDA) procedures. Excludes procedures where Access Type = Endo AVF or patients with a previous access procedure in the same arm.

The table below gives the number of HDA procedures meeting the inclusion criteria, and the percentage of those procedures that were primary AVF.

<table>
<thead>
<tr>
<th></th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of HDA procedures meeting inclusion criteria</td>
<td></td>
<td>263</td>
<td>4829</td>
</tr>
<tr>
<td>Percentage with primary AVF</td>
<td></td>
<td>76%</td>
<td>82.4%</td>
</tr>
</tbody>
</table>
Primary AVF Access by Year

- Your Center
- Your Region
- VQI Overall

Year:
- 2018
- 2019
- 2020
- 2021

Percentage:
- 100%
- 90%
- 80%
- 70%
- 60%
- 50%
- 40%
- 30%
- 20%
- 10%
- 0%
Primary AVF Access in Your Region (Jan-Dec 2021)

- Other centers in your region
- Your center

4 of 5 centers displayed

*** Indicates centers rate differs significantly from the regional rate.

Primary AVF Access by Region Across VQI (Jan-Dec 2021)

- Midwest
- New England
- Rocky Mtns
- New York
- Virginia
- VQI
- Great Lakes
- Carolinas
- Mid-Atlantic
- Southeast
- Mid-America

Regions (regions with <3 centers with at least 10 cases not shown)

*** Indicates region's rate differs significantly from the VQI rate.
IVCF: Filter Retrieval Reporting

Procedures performed between January 1 and December 31, 2019

Includes Inferior Vena Cava Filter (IVCF) procedures. Excludes filters with permanent planned duration, patients who have expired, or patients where no follow-up was possible.

The table below gives the number of procedures meeting the inclusion criteria, and the percentage of those procedures in which the filter was reported as retrieved (or retrieval was attempted) at any time post-procedure. Because follow-up is critical for assessing filter retrieval, cases meeting the inclusion criteria are broken down into those with follow-up records (at least 1 follow-up record) and those without follow-up records.

<table>
<thead>
<tr>
<th>Category</th>
<th>Your Center</th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of IVCF procedures meeting inclusion criteria</td>
<td>123</td>
<td>1166</td>
<td></td>
</tr>
<tr>
<td>Number without follow-up records</td>
<td>78</td>
<td>206</td>
<td></td>
</tr>
<tr>
<td>Number with follow-up records</td>
<td>45</td>
<td>960</td>
<td></td>
</tr>
<tr>
<td>Percentage with Filter Retrieval, or Attempt at Retrieval</td>
<td>19.5%</td>
<td>54.5%</td>
<td></td>
</tr>
<tr>
<td>Percentage not retrieved because No Follow-up Records Created</td>
<td>63.4%</td>
<td>17.7%</td>
<td></td>
</tr>
<tr>
<td>Percentage not retrieved because Not Clinically Indicated</td>
<td>8.9%</td>
<td>17.9%</td>
<td></td>
</tr>
<tr>
<td>Percentage not retrieved because Patient Declined</td>
<td>2.4%</td>
<td>2.5%</td>
<td></td>
</tr>
<tr>
<td>Percentage not retrieved because Lost to Follow-Up</td>
<td>0.8%</td>
<td>2.7%</td>
<td></td>
</tr>
<tr>
<td>Percentage not retrieved because Deemed Too Late for Removal</td>
<td>0%</td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td>Percentage not retrieved because Planned Later Removal</td>
<td>0.8%</td>
<td>3.7%</td>
<td></td>
</tr>
<tr>
<td>Percentage not retrieved because No Reason Given</td>
<td>4.1%</td>
<td>1.4%</td>
<td></td>
</tr>
</tbody>
</table>
IVC Filter Retrieval Reporting in Your Region (Jan-Dec 2019)

Centers (centers with <10 cases not shown)

3 of 3 centers displayed

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

IVC Filter Retrieval Reporting by Region Across VQI (Jan-Dec 2019)

Regions (regions with <3 centers with at least 10 cases not shown)

*** Indicates region’s rate differs significantly from the VQI rate.
Regional Improvement Projects

Katharine McGinigle, CVQG Medical Director

Brainstorming for new Regional Quality Improvement Projects
Arterial Quality Council:
Thomas Todoran, MD
Spring 2022 AQC Update

• Discussion for development of new National Quality Initiatives
  – Discharge Mediation measure placed in maintenance mode due to high compliance
  – EVAR Sac Diameter – need for continued efforts to improve compliance

• National LTFU Survey creation & results

• VQI Risk Calculators

• Harmonization of Urgency variables as much as possible across “like” registries
Venous Quality Council:
Maureen Sheehan, MD
SVS created a separate Venous RAC
The Vascular Quality Initiative - National Venous RAC Schedule (vqi.org)

2021: 3 proposals

• Incidence of venous thromboembolic events (VTE) after endovenous ablation in patients with venous stasis ulcers (C6 disease): Jaime Benarroch-Gampel
• Impact of Treatment Length and Treatment Region on Clinical Outcomes after Varicose Vein Procedures: Halbert Bai
• Safety and efficacy of endovenous ablation in patients with a history of DVT: Mikel Sadek

• AVF meeting
  February 23rd - 26th, 2022

Ideas for Venous Registry Specific Metrics:
  – Anticoagulation after venous stents?
  – C2 disease for varicose veins?
  – IVC temporary filter retrieval?
  – IDEAS???
Arterial Research Advisory Council:

Elizabeth Genovese, MD
Dr. Leila Mureebe,
SVS PSO Associate Medical Director

—Creating videos on how to submit a RAC Proposal for “success”

—Creating useful tools and tips to train new investigators
1. Management and treatment outcomes of patients undergoing endovenous ablation are significantly different between Intersocietal Accreditation Commission-accredited and nonaccredited vein centers
Andrea T Obi, Sophia Afridi, Fedor Lurie DOI: 10.1016/j.jvsv.2020.07.007

2. Transcarotid artery revascularization versus carotid endarterectomy and transfemoral stenting in octogenarians
Ambar Mehta, Priya B Patel, Danielle Bajakian, Richard Schutzer, Nicholas Morrissey, Mahmoud Malas, Marc Schermerhorn, Virendra I Patel DOI: 10.1016/j.jvs.2021.05.028

3. Percutaneous brachial access associated with increased incidence of complications compared with open exposure for peripheral vascular interventions in a contemporary series
Charles DeCarlo, Christopher A Latz, Laura T Boitano, Anna A Pendleton, Jahan Mohebali, Mark F Conrad, Matthew J Eagleton, Samuel I Schwartz DOI: 10.1016/j.jvs.2020.08.143

4. A comparison of administrative data and quality improvement registries for abdominal aortic aneurysm repair
Kirsten D Dansey, Livia E V M de Guerre, Nicholas J Swerdlow, Chun Li, Jinny Lu, Priya B Patel, Salvatore T Scali, Kristina A Giles, Marc L Schermerhorn DOI: 10.1016/j.jvs.2020.06.105

5. Perioperative Outcomes for Centers Routinely Admitting Postoperative Endovascular Aortic Aneurysm Repair to the ICU
Thomas W Cheng, Alik Farber, Scott R Levin, Mahmoud B Malas, Karan Garg, Virendra I Patel, Ahmed Kayssi, Denis Rybin, Rebecca B Hasley Jeffrey J Siracuse DOI: 10.1016/j.jamcollsurg.2021.03.035

7. Lower Extremity Revascularization for Chronic Limb-Threatening Ischemia among Patients at the Extremes of Age  Tanner I Kim, Edouard Aboian, Uwe Fischer, Yawei Zhang, Raul J Guzman, Cassius Iyad Ochoa Chaar DOI: 10.1016/j.avsg.2020.08.135

8. Stress testing before abdominal aortic aneurysm repair does not lead to a reduction in perioperative cardiac events  Jesse A Columbo, Falen Demsas, Zachary J Wanken, Bjoern D Suckow, Jocelyn M Beach, Stanislav Henkin, Philip P Goodney, David H Stone DOI: 10.1016/j.jvs.2021.02.032


Spring 2022 RAC Submission Reminders

• Ensure your RAC submission is complete
  – Data Tables
  – Full Research proposal
  – CV
  – Regional RAC Review

• Your center must participate in the registry related to your research proposal
1. Review list of projects:
https://www.vqi.org/data-analysis/rac-approved-project-search/

2. Submit proposal online:
http://abstracts123.com/svs1/meetinglogin

3. Deadlines for submissions:
The Vascular Quality Initiative | National Arterial and Venous RAC Schedules (vqi.org)
Governing Council:
Katharine McGinigle, MD
Dr. Lemmon provided an updated on the VQI Fellows in Training program

The Governing Council provided input on the PSO 2022/2023 software development activities

Dr. Jorgensen provided an update on the FDA panel discussions regarding type 3 endoleaks

Kristopher Huffman presented the PSO’s strategy around the development and maintenance of Risk Calculators
Welcome our Keynote Speaker,
Dr. Emily Spangler
University of Alabama Medical Center
Enhanced Recovery After Surgery (ERAS®) in Vascular Care

Emily Spangler
VQI Carolinas Meeting
May 6, 2022
Outline

Introduction

- Surgical outcomes reflect more than just the intra-operative care
- Enhanced Recovery after Surgery (ERAS®) pathways have been applied in other surgical disciplines
  - Associated with decreased length of stay
  - Reduced care disparities

Objectives

- History of ERAS®
- ERAS® Principles
- SVS Aortic ERAS® Guidelines
- Pathways to Implementation
History of ERAS®

- Concepts of multimodal surgical care postulated by Dr. Kehlet in 1997
  - Modify the components of the surgical stress response to improve recovery and reduce postoperative morbidity

- 2001-2004 Perioperative ERAS® study group formed

History of ERAS®

• Expansion:
  • 2009 Rectal surgery
  • 2010 formal non-profit medical society
    • https://erassociety.org/
  • Progressive growth through other surgical specialties:
    • Upcoming: Emergency Surgery, Cytoreductive Surgery, Upper GI
    • Resources for Anesthesia and Nursing and Allied Healthcare Providers

• Bariatric (2016)
• Breast (2017)
• Cardiac (2019)
• Head & Neck (2016)
• Hepatobiliary (2012)
• Neonatal/Pediatric (2020)
• OB/GYN (2019)
• Orthopedics (2019)
• Thoracic (2019)
• Urology (2016)
• Vascular (2022)
ERAS Principles

- Pre-admission risk stratification
  - Patient optimization
  - Patient education and expectation setting

- Attenuating surgical stress

- Maintaining postoperative physiological functions
ERAS® vs Fast-track

- **ERAS®** - ERAS® society endorsed statement/protocol

- **ERP** - enhanced recovery protocol (not necessarily ERAS® endorsed)

- Fast-track – used in much of the earlier literature before formalized ERAS® programs, however didn’t always include multimodal/transdisciplinary approach to periop surgery or patient engagement.
  - Shift in emphasis from *speed* of recovery to *quality* of patient care (from diagnosis throughout recovery)
SVS Aortic ERAS® Guidelines

**PRE**

- Pre-hospital
- Day of Surgery
- Admission

- Counseling/education: set goals for postoperative course including diet, ambulation, pain control
- Patient optimization
- Frailty and delirium screening

**INTRA**

- POD 0
- POD 1
- POD 2
- POD 3
- POD 4
- Discharge

- PACU
- Critical care
- Ward

- Optimal fluid management
- Restrictive postoperative fluid management
- Multimodal opioid-sparing analgesia and mid-thoracic epidural

- No prolonged fasting
- Nausea and vomiting prevention

**POST**

- Early enteral nutrition, no nasogastric tube
- Delirium screening and prevention
- Early removal lines & drains
- Early mobilization, physical therapy for those who cannot walk on POD1

- Discharge education

- Audit compliance & outcomes

- Optimization
- Stress Minimization
- Protocolized Normalization
## Preadmission

- Risk factor screening
- Risk factor optimization
  - Concept of prehabilitation

### ERAS element

<table>
<thead>
<tr>
<th>ERAS element</th>
<th>Recommendation</th>
<th>GRADE</th>
<th>Evidence level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preadmission</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 1. Patient information, education, counseling | Patients should receive dedicated verbal and written preoperative education and counseling (grade 1C) | Strong | Low*
| 2a. Screening, assessment, and optimization: anemia screening | Evaluate the cause of and treat chronic preoperative anemia (grade 2D) | Weak | Very low*
| 2b. Screening, assessment, and optimization: nutritional deficiency | Screen for malnutrition and correct nutritional deficiency, preferably with oral regimens (grade 1B) | Strong | Moderate*
| 2c. Screening, assessment, and optimization: frailty | Frailty screening is recommended as a routine part of preoperative patient assessment (grade 1B) | Strong | Moderate |
| 2d. Screening, assessment, and optimization: delirium risk | Screen for delirium risk and implement preoperative practices to minimize onset of delirium as a routine part of practice (grade 1C) | Strong | Low |
| 2e. Screening, assessment, and optimization: tobacco and alcohol | i. Prescribe smoking cessation therapy and recommend a minimum of 4 weeks smoking cessation before surgery (grade 1A) | Strong | High*
| | ii. Recommend alcohol cessation 4 weeks before surgery, particularly for patients who consume more than five alcohol equivalents or 15 alcohol units per day (grade 1C) | Strong | Low*
| 2f. Screening, assessment, and optimization: medical risk | i. Cardiac risk should be evaluated and optimized with antiplatelet therapy, statins, antihypertensive therapy, and diabetes control before elective surgery (grade 1A) | Strong | High |
| | ii. Risk of acute kidney injury should be evaluated and optimized before elective surgery (grade 1A) | Strong | High |
| 3. Preoperative exercise therapy and prehabilitation | Recommend 6 weeks of supervised exercise therapy before elective surgery (grade 1A) | Weak | Low |
| 4. Perioperative antiplatelet or anticoagulation plan | i. Continue aspirin throughout the perioperative period (grade 1A) | Strong | High |
| | ii. Stop secondary antiplatelet medications and anticoagulant agents before surgery, except for select patient populations (grade 1B) | Strong | Moderate |
SVS Aortic ERAS Guidelines

• **Preoperative phase** is where a lot of the newer concepts to vascular care reside
  • So far, much is abstracted from other ERAS protocols of major abdominal surgery
    • Future vascular-specific evidence base will need to be developed or validated

• **Fasting**
• **Carbohydrate loading**
• **Multimodal pain control**
Preoperative

- Fasting and carbohydrate loading

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Fasting</td>
<td>Avoid overnight fasting; encourage clear fluids for ≤2 hours and light foods for ≤6 hours before the induction of general anesthesia (grade 1A)</td>
<td>Strong</td>
</tr>
<tr>
<td>6. Carbohydrate loading</td>
<td>Patients without diabetes should receive a preoperative carbohydrate drink (grade 2B)</td>
<td>Weak</td>
</tr>
</tbody>
</table>
Preoperative

- Medication therapy – multimodal pain control and n/v prophylaxis

<table>
<thead>
<tr>
<th>8. Preanesthetic sedative and analgesia medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Do not routinely use sedatives to reduce anxiety preoperatively (grade 1C)</td>
</tr>
<tr>
<td>ii. Routinely use preoperative administration of acetaminophen, NSAIDs, and gabapentinoids as part of a multimodal opioid-sparing analgesia strategy (grade 1C)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10. Prevention of nausea and vomiting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perform a risk assessment for PONV, routinely use multimodal PONV prophylaxis based on the assessment findings, and use PONV rescue with a different class of antiemetic (grade 1A)</td>
</tr>
</tbody>
</table>
• Medication therapy – DVT and antibiotic prophylaxis

| 7. Venous thromboembolism prophylaxis | Routinely use calf-length intermittent compression devices combined with either low-dose unfractionated heparin or low-molecular-weight heparin starting immediately before surgery and continuing at least throughout the hospitalization (grade 1B) | Strong | Moderate |
| 9. Antimicrobial agents | Prophylactic intravenous antibiotic dosing should begin 30-60 minutes preoperatively, with redosing intraoperatively within two serum half-lives of the antimicrobial agent used or with substantive intraoperative blood loss, and extending no more than 24 hours postoperatively (grade 1A) | Strong | High |
# Intraoperative - Anesthetic

<table>
<thead>
<tr>
<th>Intraoperative</th>
<th>Neuromuscular monitoring should be used to ensure adequate intraoperative muscle relaxation and full reversal of neuromuscular blockade before extubation (grade 1A)</th>
<th>Strong</th>
<th>High(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11a. Anesthetic protocol: neuromuscular blocking agents and monitoring</td>
<td>Invasive cardiovascular monitoring with an arterial catheter is essential; the MAP should be maintained to near baseline values and at or &gt;65 mm Hg (grade 1B)</td>
<td>Strong</td>
<td>Moderate</td>
</tr>
<tr>
<td>11b. Anesthetic protocol: cardiovascular monitoring</td>
<td>Adjunctive renal protective medications and methods of ischemic preconditioning of any type can cause harm and should not be used for infrarenal repairs (grade 1B)</td>
<td>Strong</td>
<td>Moderate</td>
</tr>
<tr>
<td>11c. Anesthetic protocol: renal protection</td>
<td>Use cell salvage (grade 1B)</td>
<td>Strong</td>
<td>Moderate</td>
</tr>
<tr>
<td>11d. Anesthetic protocol: cell salvage</td>
<td>Use lung protective strategies (grade 2C)</td>
<td>Weak</td>
<td>Low(^a)</td>
</tr>
</tbody>
</table>
## Intraoperative - Other

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11f. Epidural analgesia</td>
<td>Mid-thoracic (T6-T9) epidural analgesia should be used intraoperatively and continued postoperatively as an infusion or patient-controlled analgesia using a combination of a local anesthetic and an opioid (grade 1B)</td>
<td>Strong</td>
</tr>
<tr>
<td>12. Body temperature management</td>
<td>Use multiple strategies to maintain normothermia, including prewarming and active warming of patients intraoperatively (grade 1B)</td>
<td>Strong</td>
</tr>
<tr>
<td>13. Drainage of surgical site</td>
<td>Do not routinely use drains in the surgical wound (grade 2C)</td>
<td>Weak</td>
</tr>
</tbody>
</table>
# Postoperative

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>14. Multimodal analgesia and opioid reduction strategies</strong></td>
<td>Routinely use multimodal analgesic regimens to improve pain control and reduce opioid consumption (grade 1B)</td>
<td>Strong</td>
<td>Moderate&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>15. Nasogastric drainage</strong></td>
<td>Avoid the routine use of postoperative nasogastric tubes (grade 1A)</td>
<td>Strong</td>
<td>High&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>16. Oral feeding</strong></td>
<td>An early return to a normal diet and oral nutritional supplements should be promoted (grade 1B)</td>
<td>Strong</td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>17. Fluid therapy</strong></td>
<td>If intravenous fluids are indicated, restrict postoperative fluid therapy to 1.5 L/d (grade 1B)</td>
<td>Strong</td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>18. Urinary drainage</strong></td>
<td>Early removal of urinary drainage catheters is recommended (grade 1C)</td>
<td>Strong</td>
<td>Low&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>19. Glycemic control</strong></td>
<td>Maintain glycemic control, with attention to avoiding hypoglycemia (grade 1B)</td>
<td>Strong</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>20. Early mobilization strategy</td>
<td>Use a formal plan for early mobilization, with early physical therapy involvement when needed (grade 1C)</td>
<td>Strong</td>
<td>Low*</td>
</tr>
<tr>
<td>21. Discharge education</td>
<td>Use both written and verbal discharge education and follow-up telephone calls within 24-48 hours of hospital discharge and arrange clinic follow-up visits with both the surgeon and the primary care physician at least once by 30 days postoperatively (grade 1C)</td>
<td>Strong</td>
<td>Low*</td>
</tr>
<tr>
<td>22. Audit of outcomes</td>
<td>Routine auditing of ERAS care processes and feedback to all staff involved are necessary (grade 1C)</td>
<td>Strong</td>
<td>Low*</td>
</tr>
</tbody>
</table>
SVS Aortic ERAS Guidelines

- Not all recommendations have aortic-specific evidence base available

- Uptake does not need to be all-or-nothing
  - In other ERAS protocols, increasing compliance (elements used) associated with decreased complications and LOS
Organizational Readiness for Change

*Implementation Science 2009, 4:67*  
http://www.implementationscience.com/content/4/1/67
Pathways to Implementation

• A protocol alone is not enough
  • 2007 - ERAS® Study group published data showing that just adding a protocol was not sufficient to change practice. (Maessen et al, Br J Surg, 2007)

• Multi-disciplinary care and buy-in is critical
  • Recommend surgical, anesthesia, nursing, and therapy champions

• Audit of outcomes – VQI future role

| 22. Audit of outcomes | Routine auditing of ERAS care processes and feedback to all staff involved are necessary (grade 1C) | Strong | Low[a] |
Conclusions

- Enhanced Recovery principles and structured protocols have been successfully utilized in other major abdominal and cardiac procedures to improve quality of care delivered and outcomes.

- SVS ERAS documents outline available evidence for this:
  - Aortic Guidelines
  - Lower Extremity Bypass Recommendations

![Diagram from British Journal of Anaesthesia](image)

Katharine L. McGinigle, MD, MPH, Emily L. Spangler, MD, MS, Adam C. Pichel, MB, ChB, FRCA, Katie Ayyash, MBChB, BSc, FRCA, MSc, Shipra Arya, MD, MS, Alberto M. Settembrini, MD, Joy Garg, MD, Merin M. Thomas, PA-C, Kate E. Dell, DNP, ACACNP-BC, Iris J. Swiderski, DHSc, MPAS, PA-C, Fae Lindo, NP, Mark G. Davies, MD, PhD, MBA, Carlo Setacci, MD, Richard D. Urman, MD, MBA, Simon J. Howell, MA, MRCP, FRCA, MSc, Olle Ljungqvist, MD, PhD, and Hans D. deBoer, MD, PhD, BC, Chapel Hill, NC; Birmingham, AL; Manchester, York, and Leeds, UK; Palo Alto, CA; Milan, Italy; New Hyde Park, NY; Lafayette, IN; Melbourne, FL; San Antonio, TX; Siena, Italy; Boston, MA; Orebro, Sweden; and Groningen, The Netherlands

ABSTRACT
The Society for Vascular Surgery and the Enhanced Recovery After Surgery Society formally collaborated and elected an international, multidisciplinary panel of experts to review the literature and provide evidence-based recommendations related to all the health care received in the perioperative period for patients undergoing open abdominal aortic operations (both transabdominal and retroperitoneal approaches, including suprarenal, infrarenal, and infrarenal clamp sites) for aortic aneurysm and aortoiliac occlusive disease. Structured around the Enhanced Recovery After Surgery core elements, 36 recommendations were made and organized into preadmission, preoperative, intraoperative, and postoperative recommendations. (J Vasc Surg 2022;1-25.)

Keywords: Abdominal aortic aneurysm; Analgesia and anesthesia; Aortic occlusive disease. Evidence-based recommendations; Enhanced recovery after surgery; Guidelines; Perioperative care
Discussion

• Exciting elements of ERAS?

• Elements of concern?

• Willingness to adopt?

• Barriers to adoption?
Thank you!

- Contact info:
  - Emily Spangler
  - espangler@uabmc.edu
Breakout Rooms

Randomly Assigned
ERAS Discussion

Post Breakout Rooms
National VQI Update

Betsy Wymer, DNP, RN, RN-BC
Quality Director, PSO
What is a PSO

PSO = Patient Safety Organization

• Created under authorization of the Patient Safety and Quality Improvement Act of 2005 (PSQIA)

• Goal – Improve quality & safety of health care delivery

• PSQIA encourages voluntary reporting & sharing of patient safety information without fear of legal discovery
Functions of a PSO

- Protects comparative data from discovery
- Eliminates need for informed patient consent & IRB approval for core registry participation
- Allows patient identifiers to be included for internal purposes
- Only de-identified data can be released
  - Benchmarking, risk adjustment and merging with other identified data sets done within the PSO
  - QI research requires approval of PSO RAC committee; analytic data sets are de-identified
PSO Activities

• Patient Safety Work Product (PSWP) - Reports that identify center-specific or physician-specific outcomes or processes
  – Semi-annual reports
  – Quarterly Dashboards
  – COPI/CAPI reports

• All reports treated as confidential

• Utilization of PSWP
  – Encourages a culture of safety
  – Provides a mechanism for feedback
  – Non-identifiable
  – Never used for punitive or competitive purposes
Center Requirements

Patient Safety Evaluation System (PSES)

• Designation of user account privileges

• PSWP analysis is recommended to be outside of normal QA/Peer Review meetings

• Develop process on how to integrate PSWP results into the overall QI operations

• PSES requires training for those with access to PSWP to ensure that the privilege & confidentiality of PSWP is maintained

• The law provides significant penalties for failure to maintain the confidentiality of PSWP
Number of Participating Centers

Location of VQI Participating Centers

928 VQI Centers

927 centers in North America

1 center in Singapore
Total Procedures Captured
(as of 4/1/2022)

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peripheral Vascular Intervention</td>
<td>317,955</td>
</tr>
<tr>
<td>Carotid Endarterectomy</td>
<td>172,414</td>
</tr>
<tr>
<td>Infra-Inguinal Bypass</td>
<td>73,346</td>
</tr>
<tr>
<td>Endovascular AAA Repair</td>
<td>71,506</td>
</tr>
<tr>
<td>Hemodialysis Access</td>
<td>69,705</td>
</tr>
<tr>
<td>Carotid Artery Stent</td>
<td>72,267</td>
</tr>
<tr>
<td>Varicose Vein</td>
<td>53,246</td>
</tr>
<tr>
<td>Supra-Inguinal Bypass</td>
<td>23,646</td>
</tr>
<tr>
<td>Thoracic and Complex EVAR</td>
<td>24,435</td>
</tr>
<tr>
<td>Lower Extremity Amputations</td>
<td>24,459</td>
</tr>
<tr>
<td>IVC Filter</td>
<td>17,117</td>
</tr>
<tr>
<td>Open AAA Repair</td>
<td>16,188</td>
</tr>
<tr>
<td>Vascular Medicine Consult</td>
<td>527</td>
</tr>
<tr>
<td>Venous Stent</td>
<td>76</td>
</tr>
</tbody>
</table>

VQI Total Procedure Volume

(Through March 31, 2022)

Total Procedure Volume reflects net procedures added to the registry for the month.
2022 VQI Annual Meeting at VAM

Dates:
Tuesday afternoon, June 14, 2022, 12PM – 6:30PM ET
Wednesday, June 15, 2022, 8AM – 5PM ET

Location:
Hynes Convention Center, Boston, MA

*Poster Presentation and Networking Reception
Tuesday, June 14, 2022
5:00PM to 6:30PM

Hope to see you there!!!
Long Term Follow Up Reports

Currently available:

• EVAR, CAS, CEA

• Soon to be released PVI, TEVAR, IVC, HDA......
Device Assist and Symmetric Integration – Coming Soon

- **Device Assist** – New device search functionality within Pathways to assist in finding the devices used for treatment
  - Search by manufacturer, device name
  - Available in the PVI Registry Comprehensive data collection tool

- **Symmetric** – Healthcare supply software company
  - Reducing/eliminating data discrepancies
  - Providing real-time up to date access to FDA approved devices
Pilot Extension

My PAD
My Peripheral Arterial Disease Pilot

- Quality of Life survey for the PVI Registry
- Extending pilot to new interested centers
- Start up education and promotional documents will be provided
- For questions or interest please contact cmorgan@svspso.org
Website Redesign

• A new VQI.org experience is coming!
• New look and feel, fresh content, and improved navigation.
• Our goal is to showcase the new site at VQI@VAM
The SVS Vascular Quality Initiative (VQI) is now on LinkedIn. Follow our page for the latest news and events!
VQI Mobile App

- The SVS PSO is pursuing the creation of a brand new VQI Mobile App that could be used on your personal device.
- We hope this will allow us to get information to you more effectively and efficiently.
- The VQI Mobile App will start out as a communication tool, and hopefully grow from there.
Circulatory System Devices Panel of the Medical Devices Advisory Committee Meeting

- Nov 2, 2021 – Day #1
  - Benefit-risk profile of the Endologix AFX endovascular graft system with regards to the risk of Type III endoleaks

- Nov 3, 2021 – Day #2
  - Real World Surveillance of AAA Endovascular Stent Grafts
Conclusions:
Endologix AFX has history of increased Type III endoleaks –
• Panel expressed concerns about role of AFX 2
• Mitigation efforts taken
• Further steps underway with FDA, industry and VQI

Real World Evidence plays an important role in analyzing EVAR
• Follow up 5-10 years
• Needs support
• Clinical Registry – VQI
• Vascular Research Collaborative (VRC)
• VISION - CMS claims linkage
VQI analysis of Paclitaxel controversy

**DELTA**
Data Extraction and Longitudinal Trend Analysis 2020-2024
Registry surveillance

Fred Resnic, MD
Lahey Hospital & Medical Center

**VISION**
Vascular Implant Surveillance and Interventional Outcomes Network

VQI-CMS claims matched analysis

Phil Goodney, MD
Art Sedrakyan, MD
Conclusions:

• Prospective, active surveillance of the SVS VQI PVI registry using DELTA did not demonstrate a signal for increased mortality

• Claims analysis through VISION did not demonstrate a signal for increased mortality or major amputation

• VQI data did not show increased mortality with Paclitaxel devices
Des Moines University is the continuing education provider for this activity.

The attendance roster will be cross-referenced with those applying for CME/CE. Sign in correctly.

Each participant **MUST COMPLETE BOTH** the attendance attestation and the meeting evaluation from the URL site – one form.

You will have 7 days from the date of the meeting to complete the forms and **SUBMIT**.

Approximately 14 days from the meeting, Des Moines University will email you instructions on how to access your certificate.

PSO leadership is providing continuing education credit to you at no charge!

If you do not complete and submit the online forms within 7 days, continuing education credit cannot be awarded.
REMEMBER TO PSO:

• **P**UT your FULL NAME in RingCentral to get credit for attendance and CME/CE credit (no exceptions will be made)

• **S**END an email to ljohnson@svspso.org with names of group members that are sharing 1 device

• **O**FFICIALLY apply for CME/CE credit by clicking this link:
  
  https://dmu.co1.qualtrics.com/jfe/form/SV_5bwAeYfFVV5gzgW

You only have **7 days** to complete forms for CME/CE Credit.

NO EMAIL WILL BE SENT AS A REMINDER OR WITH THE CME/CE LINK
Quality Improvement Update
Spring 2022

Betsy Wymer, DNP, RN, RN-BC
Quality Director, PSO
Trainee Program Update

• Mentor based 12–18-month program
• Regional meetings, center data review
• Quality and research opportunities
• VQI@VAM
• Chance to be selected for scholarship
• Quarterly check-ins with SVS PSO staff
• Satisfaction surveys, feedback
• G Lemmon@svspso.org or b wymer@svspso.org
# 2022-2023 FIT List

<table>
<thead>
<tr>
<th>FIT Mentors</th>
<th>FIT Trainees</th>
<th>Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarah Deery</td>
<td>Aarthi Minisandram</td>
<td>Maine Medical Center</td>
</tr>
<tr>
<td>Graham Roche-Nagle</td>
<td>Ben Li</td>
<td>Toronto General Hospital</td>
</tr>
<tr>
<td>Sarah Zetervall</td>
<td>Blake Murphy</td>
<td>University of Washington Medical Center</td>
</tr>
<tr>
<td>Phil Goodney</td>
<td>Brianna Krafck</td>
<td>Dartmouth Hitchcock Medical Center</td>
</tr>
<tr>
<td>Benjamin Brooke</td>
<td>Caronae Howell</td>
<td>The University of Arizona/University of Utah Hospital and Clinics</td>
</tr>
<tr>
<td>Shihuan K Wang</td>
<td>Channa Blakely</td>
<td>UTMB Health/Memorial Hermann Texas Medical Center</td>
</tr>
<tr>
<td>Danny Bertges</td>
<td>Christine Kariya</td>
<td>University of Vermont Medical Center</td>
</tr>
<tr>
<td>Adam Beck</td>
<td>Claire Motyl</td>
<td>University of Alabama Medical Center</td>
</tr>
<tr>
<td>Michael Murphy</td>
<td>Hanaa Dakour Aridi</td>
<td>IU Health – Methodist</td>
</tr>
<tr>
<td>Edward Gifford</td>
<td>Laura Healy</td>
<td>Hartford Hospital University of Connecticut</td>
</tr>
<tr>
<td>Eleftherios Xenos</td>
<td>Lauren Grimsley</td>
<td>UK Healthcare</td>
</tr>
<tr>
<td>Kyla Bennett</td>
<td>Leah Gober</td>
<td>University of Wisconsin Hospitals and Clinics Authority</td>
</tr>
<tr>
<td>Karan Garg</td>
<td>Rae Rokosh</td>
<td>NYU Langone Health</td>
</tr>
<tr>
<td>Beau Hawkins</td>
<td>Razan Elsayed</td>
<td>OU Medical Center</td>
</tr>
<tr>
<td><strong>Mitchell Cox</strong></td>
<td>Roberto Loanzon</td>
<td>Duke University Health System</td>
</tr>
<tr>
<td>Nikoloas Zacharias</td>
<td>Srihari Kumar Lella</td>
<td>Massachusetts General Hospital</td>
</tr>
</tbody>
</table>
Trainee Program Update

- Sign up to be a mentor
- Next Trainee application – January 2023
- Check [www.vqi.org](http://www.vqi.org) frequently
- Share your tweets
  #nextgenVQI
The four domains for the 2022 Participation Awards criteria:

Domain 1 – LTFU – 40% weighted
Domain 2 – Regional Meeting Attendance – 30% weighted
Domain 3 – QI Project – 20% weighted
Domain 4 – Registry Subscriptions – 10% weighted

The final score is calculated as follows:

Total points = 4 x LTFU score + 3 x Attendance score + 2 x QI score + 1 x registry score
Participation Awards


Domain – QI Project – 20% weighted

Scoring on 0 – 6-point scale to keep consistent with other measures. This gives centers options for getting 6 maximum QI points.

- Initiation of a QI Project, evidenced by submitting a Project Charter to QI@SVSPSO.ORG or bwymer@svspso.org (2 points). **One charter per year.**

- Presenting a QI Project (presentation or poster) at a Regional VQI, *Regional Society Meeting, or *Hospital Board meeting (2 points) *When presenting at succinct regional meetings, project slides must reflect a change or update in status.*

- Presenting a QI Project (presentation or poster) at the National VQI or *Vascular Annual Meeting (2 points)

- *Publish a VQI quality improvement article in a Peer Reviewed Journal (2 points)

- Centers with significant improvement or excellent performance rates on National QI Initiatives will receive one additional point (per initiative), for a maximum of 6 QI points

* Please send attestation (proof) to bwymer@svspso.org on or before December 31, 2022.
Participation Award Results

Cone Health
McLeod Regional Medical Center
WakeMed Health & Hospitals-Raleigh Campus
WakeMed Health & Hospitals-Cary Campus

Novant Health Forsyth Medical Center
Novant Health Presbyterian Medical Center
Sanger Heart and Vascular Institute
University of North Carolina Hospitals
Self Regional Health
Alamance Regional Medical Center
Mission Hospital
Prisma Health Richland
Novant Health Matthews Medical Center
Atrium Health Pineville
Atrium Health Cabarrus

Medical University Hospital Authority
Vidant Medical Center
Wake Forest University Baptist Health Medical Center
Duke University Medical Center
CarolinaEast Medical Center
Quality Improvement Updates

• How to Begin a Charter
  – Attend Charter Focus Calls
  – Listen to Prior Webinars
    • www.vqi.org
  – Review Sample Charters
    • https://www.vqi.org/quality-improvement/qi-projects/
  – Network with colleagues
  – 1:1 Meeting
    • bwymer@svspso.org
Quality Improvement Updates

• Charter Focus Calls
  – New format
• Quarterly Webinars
• Monthly VQI Newsletter
• Sample Charters
• Overview of QI Tools
• https://www.vqi.org/quality-improvement/
Updates for Spring 2022
VQI Regional Meeting
PATHWAYS Support

Claims Validation

The annual claims validation process is intended to ensure that all eligible cases have been captured in the registry and is a requirement of participation in the VQI.

The 2020 Claims Validation process was launched in September 2021.

● The deadline to finish was 12/31/21.

● PATHWAYS Support is here to help you. Please reach out if your center was selected to participate in the audit and would like assistance.

The selection and launch of **2021 Claims Validation is coming soon**! Stay tuned!
What’s New?
Please check out recent enhancements in the PATHWAYS Support tab designed to improve your experience. Let us know what you think!

- **Documents** – Easy access to important abstraction documents.
  - **Code List** – Complete list of current VQI Eligible ICD-10 and CPT codes.
  - **Data Dictionary** – Ability to download data variables by procedure or all procedures.
  - **Inclusion/Exclusion Criteria** – Defines the procedures that are eligible for Inclusion/Exclusion in the registry.
  - **Paper Form** – Paper form for data abstraction.
- **Release Notes** - Access details on historical registry updates and other important announcements.
- **Training Schedule** – List of upcoming training opportunities and registration links for new staff and experienced abstractors.
PATHWAYS Support

Coming Soon...

The Support Team continues to work on implementing enhanced tools and training opportunities for new and existing PATHWAYS users to learn more about PATHWAYS functionality.

More details to come!
Technology Updates for VQI
Released in Q3 2021

- CAS Follow-up Outcomes Report
  - A new 'Follow-up Outcomes Report' for the CAS registry, developed by the SVS PSO, is now available in the PATHWAYS Reporting tab. The report will provide key follow up metrics for VQI sites with center data as well as regional and all VQI benchmarking and includes drill down capabilities to better understand center data at the procedure level.
Released in Q3 2021

- **Infra Opioid Pilot**
  - Infra-inguinal Bypass registry was updated to include new Opioid fields for all participating sites. The fields appear on their own tab at the end of the procedure and follow-up forms.
  - Procedure variables were added to the Procedure form in a tab called “Opioid”. The tab contains both Demographics and Post-Op variables.
  - Follow-up variables are in the 30-day follow-up and long-term follow-up forms for Infra-inguinal Bypass procedures.
  - Discharge and follow-up opioid detail columns display dynamically depending on type(s) of opioids selected.
Released in Q3 2021

• Infra Opioid Pilot, cont.
  • Follow-up medications also include reference columns so the user can see the number of pills/patches and refills originally prescribed at discharge. These reference columns automatically populate based on data entered in the procedure form, or display N/A if there is no discharge information available.
  • For discharge and follow-up opioids, the Morphine Equivalent (MME) column is automatically calculated using medication-specific factors. MME is calculated as Dose x Frequency x Conversion Factor. We will not calculate the MME value if the medication type is Other, and/or if the frequency is PRN. Please note that for Methadone the conversion factor increases at higher doses and for Fentanyl it is dosed in mcg/hr instead of mg/day.
Released in Q3 2021

- TEVAR revisions - New dependency for LTFU Entry Flow and Dissection Date and Type
  - TEVAR LTFU Entry Flow:
    - A change was made to the dependency for Entry Flow on the TEVAR follow-up form. The field ‘Entry Flow’ no longer displays when imaging is equal to ‘None’.
  - TEVAR Dissection Date and Type:
    - There was formerly no validation between Dissection Onset Date and Procedure Date, or between Dissection Onset Date and Dissection Type. As such, it was possible to enter a Dissection Date that is after Procedure Date, as well as record a Dissection Date that does not match the selected type (Acute or Chronic). Validation was added so if this mismatch occurs, users must correct either the ‘Dissection Date’ or the ‘Dissection Type’ before being allowed to submit the procedure form.
Released in Q3 2021

• CEA revisions
  • New fields associated with imaging were added.
  • New dependencies were added to the Modified Rankin Score fields so they will display on the form only when the patient had a stroke.
  • The layout of the Pre-op Imaging section was changed slightly in order to harmonize the format with other registries where Right and Left sides are displayed separately in two columns.
  • The Stenosis fields being retired were mapped to new fields.
Released in Q3 2021

• CAS revisions
  • New event fields and fields associated with imaging were added in order to collect more granular information.
  • Modified fields - Lesion Stenosis L1 and L2 have updated min/max ranges from 0-99 to 0-100.
  • The Other Imaging Stenosis fields were retired and replaced with fields that are specific to each imaging type.
Released in Q3 2021

• VMC revisions
  • New fields were added to the VMC registry to capture Peak Systolic Velocity and End Diastolic Velocity Stenosis Events in the Procedure and Long-Term Follow-up.
  • The response options for the Carotid Stenosis Right and Carotid Stenosis Left in both the Procedure and the Follow-up forms were revised.
  • The Carotid PSV Right and Carotid PSV Left data collection fields were retired. The layout of the Carotid Disease section of the Procedure Form will be changed slightly in order to harmonize the format with other registries where Right and Left sides are displayed separately in two columns.
Released in Q3 2021

- IVC Filter revisions
  - The registry consolidated the “Other” IVC filter device options into a single option for both retrievable and permanent devices. All of the “Other” temporary and retrievable devices (select options 20 through 39 in the IVC_FILTER_TYPE field) were retired and a new 99 = Other field was created which will open the existing Other field (IVC_FILTER_TYPE_OTHER).
Released in Q3 2021

- Add comment to completed record
  - Users are now able to append additional comments without making changes to original data in the form. The Comments field now includes a new button labelled “Update Comments” that initially appears as grayed out. If users change or add any information in the Comments field, the button becomes active and allows the user to save the changes without reverting the form.
Released in Q3 2021

- Auto-save before timeout
  - Formerly, if users were logged out of PATHWAYS due to inactivity, any data entry changes they have made were lost. This feature will automatically save changes to records and will flag the record accordingly in the record information table.
Released in Q4 2021

- EVAR and TEVAR revisions: Convert "Aptus HeliFX" device name to "HeliFX"
  - The manufacturer name was removed from the response options for the “Anchors Type” field. Therefore the “Aptus Heli-FX” device name was converted to “Heli-FX”. This change affected both the procedure and long-term follow-up (LTFU) forms.

Released in Q4 2021
**Released in Q4 2021**

- **EVAR Follow-up Outcomes Report**
  - The existing EVAR Follow-up Outcomes report was moved from Insights to the Reporting tab in PATHWAYS. As a result, the Report Privileges in the User Information page under the Admin tab replaced the current Insights section.
  - The report was updated to include Kaplan Meier rates of occurrence for Stroke, Myocardial Infarction, Mortality, and Re-intervention at 1 year.
  - At the time of release, all users who currently had access to the Insights version of the report will automatically have the permission enabled for the updated version.
Released in Q4 2021

- Custom Lists
  - A new “Custom Lists” button was added to the Admin tab in PATHWAYS. The existing “Assistant Setup” and “Hemodialysis Access Late Follow-up Contact” icons under the Admin tab were transitioned to the “Custom Lists” functionality. Custom Lists will allow users to create Assistants, Trainees and Hemodialysis Access late Follow-Up Contacts.
Released in Q4 2021

- **Infra Opioid Updates**
  - Antidepressant option was removed from the Non-Opioid Pain Med Use variables.
  - The Number of Pills Prescribed fields was modified to accept 3 digits instead of 2.
  - The “Number of Refills Since Procedure” labels was changed to “Number of New Prescriptions Since Procedure.”
  - The Dose, frequency, number of pills/patches, and number of new prescriptions fields will be optional in the 30-day follow-up form.
  - The Dose, frequency, number of pills/patches, and number of new prescriptions fields will remain required on the Long-Term Follow-up (LTFU) but will not be mandatory for follow-up credit.
  - The LTFU Completion Rate will be recalculated. LTFU records submitted before the release that meet the updated mandatory field requirements will be flagged as valid and included in the calculation for successful follow-up.
Released in Q4 2021

- VQI Across Registry Revisions - Gender to Sex
  - The label for the “Gender” data collection field will be changed across all VQI registries to “Birth Sex” and a new response option, “Other”, will be added. The help text will be updated to reflect this change:

```
Birth Sex

Male = As assigned at birth.
Female = As assigned at birth.
Other = Not designated.
```
Released in Q4 2021

- New COVID Vaccination fields
  - Four new data collection fields will be added under the Procedure tab in PATHWAYS to collect information about COVID-19 vaccines
**Released in Q4 2021**

- New Trainee and Other Assistant fields
  - PATHWAYS Admin section of PATHWAYS was updated to introduce new Trainee fields to the VQI registries. This release allows trainee and other assistant information and retires the Assistant field previously used to collect similar information.
Released in Q4 2021

- EVAR/TEVAR revisions
  - **EVAR**
    - The min/max range for Largest Sheath Size Right and Largest Sheath Size Left will be changed from 7-24 to 6-24.
    - The help text will be updated to reflect the change in the min/max range, and the existing EVAR Devices graph will be removed.
  - **TEVAR**
    - The min/max range for Largest Sheath Size Right and Largest Sheath Size Left will be changed from 16-30 to 6-30.
    - The help text will be updated to reflect the change in the min/max range, and the existing TEVAR Devices graph will be removed.
Released in Q4 2021

- CEA Follow-up Outcomes Report
- A new 'Follow-up Outcomes Report' for the CEA registry, developed by the SVS PSO, is now available in the PATHWAYS Reporting tab. The report will provide key follow up metrics for VQI sites with center data as well as regional and all VQI benchmarking and includes drill down capabilities to better understand center data at the procedure level.
Registry Projects
SVS Post-Market Surveillance Projects

• These projects are conducted within the SVS PSO and only non-identifiable data (removal of patient, center and physician information) will be provided to Medtronic/BARD/Cook/Gore or the FDA. Only standard of care practice is being evaluated. For such PSO activities, patient informed consent and Institutional Review Board review are not required.

• Sites must follow their institutional guidelines.
The SVS PSO is excited to announce the continuation of the TEVAR Dissection Surveillance Project to evaluate the Cook Zenith Dissection Endovascular System. FDA approval was granted for this device after safety and effectiveness were demonstrated in pre-market studies of complicated dissection with the proviso that the efficacy of TEVAR treatment of descending aortic dissection would be more fully analyzed through post-market surveillance, as was done through VQI for the W. L. Gore and Medtronic devices after their approval.

- Patients will have 30 day, and annual visits for 5 years.
- Total reimbursement of $4,000 per patient for a patient followed annually for 5 years
TEVAR Dissection Surveillance Project

- 73 of the 180 required patients enrolled (39 potential cases in process)
- Retrospective enrollment allowed- All eligible cases from December 31, 2018 (protocol FDA approval date)
- 34 30-Day visits completed, 18 1-year follow-up visits completed and 1 2-year follow-up visit completed
- All 40 sites enrolled (5 are in contracting)
- This project is conducted within the SVS PSO and only non-identifiable data (removal of patient, center and physician information) will be provided to Cook or the FDA. Only standard of care practice is being evaluated. For such PSO activities, patient informed consent and Institutional Review Board review are not required.
Initiated in October 2014, the TEVAR Dissection Surveillance Project Arm evaluates the W.L. Gore and Medtronic devices for treatment of Type B thoracic dissections.

Meeting FDA requirement
○ 194 chronic and 200 acute patients with device technical success

Currently in 5-year follow-up phase
PATHWAYS Support
Fall 2022 Carolina’s Regional Meeting

Friday, November 4

• In person
• Hybrid
• Remote
Meeting Attendance Credit

REMEMBER TO PSO:

• **P**UT your FULL NAME in RingCentral to get credit for attendance and CME/CE credit (no exceptions will be made)

• **S**END an email to ljohnson@svspso.org with names of group members that are sharing 1 device

• **O**FFICIALLY apply for CME/CE credit by clicking this link: https://dmu.co1.qualtrics.com/jfe/form/SV_5bwAeYfFVV5gzgW

You only have 7 days to complete forms for CME/CE Credit.

NO EMAIL WILL BE SENT AS A REMINDER OR WITH THE CME/CE LINK