I. Welcome and Introduction  Graham Roche-Nagle, MD
II. Follow up on Spring meeting
III. National VQI Update  Carrie Bosela
IV. Regional Data Review  Graham Roche-Nagle, MD
V. QI Project Discussion
VI. AQC Update
VII. RAC Update
VIII. Governing Council Committee Update
IX. COPI Report:  Naomi Eisenberg and Debbie MacAulay, M2S
X. Regional Projects
XI. Questions, Next Meeting and Adjourn
Welcome and Introductions

- CISSSO (Gatineau, QC)
- Covenant Health/Grey Nuns Hospital (Edmonton, AB)
- St. Michael's Hospital (Toronto, ON)
- Thunder Bay Regional Health Sciences Centre (Thunder Bay, ON)
- Toronto General Hospital (Toronto, ON)

- Guests
- Debbie Macauley, Business Development Specialist, M2S
National VQI Update: (PSO Remote), SVS PSO
Number of Participating Centers

Location of VQI Participating Centers

437 Centers, 46 States + Canada
18 Regional Quality Groups

- Canadian Vascular Quality Initiative
- Upper Midwest Vascular Network
- Pacific NW Vascular Study Group
- Northern California Vascular Study Group
- Southern California Vascular Outcomes Improvement Collaborative
- Rocky Mountain Vascular Quality Initiative
- Southern Vascular Outcomes Network
- Mid-America Vascular Study Group
- Southeastern Vascular Outcomes Network
- Michigan Vascular Study Group
- Vascular Study Group of New England
- Vascular Study Group of Greater New York
- Mid-Atlantic Vascular Study Group
- Great Lakes Vascular Study Group
- Virginias Vascular Study Group
- Midwest Vascular Collaborative
- Carolinas Vascular Quality Group
- MidSouth Vascular Study Group
### Total Procedures Captured (as of 9/1/2017)

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peripheral Vascular Intervention</td>
<td>129,169</td>
</tr>
<tr>
<td>Carotid Endarterectomy</td>
<td>88,534</td>
</tr>
<tr>
<td>Infra-Inguinal Bypass</td>
<td>39,850</td>
</tr>
<tr>
<td>Endovascular AAA Repair</td>
<td>35,519</td>
</tr>
<tr>
<td>Hemodialysis Access</td>
<td>33,755</td>
</tr>
<tr>
<td>Carotid Artery Stent</td>
<td>16,816</td>
</tr>
<tr>
<td>Varicose Vein</td>
<td>14,412</td>
</tr>
<tr>
<td>Supra-Inguinal Bypass</td>
<td>13,364</td>
</tr>
<tr>
<td>Open AAA Repair</td>
<td>9,994</td>
</tr>
<tr>
<td>Thoracic and Complex EVAR</td>
<td>9,530</td>
</tr>
<tr>
<td>IVC Filter</td>
<td>8,345</td>
</tr>
<tr>
<td>Lower Extremity Amputations</td>
<td>8,339</td>
</tr>
</tbody>
</table>

**VQI Total Procedure Volume**

Total Procedure Volume tab reflects net procedures added to the registry for the month.
Join your Canadian Vascular Quality Initiative peers in the VQI

We are a group of hospitals and vascular specialists in Canada who have committed to collecting, sharing, and analyzing data related to vascular interventions and outcomes. Our goal is to improve outcomes for our patients and to explore the factors that predict the best outcomes. We take advantage of the rapidly accumulating data that come from collaboration with other interested groups.

The Vascular Study Group of New England, and more recently other Regional Quality Groups, have shown us how much can be accomplished with such a regional collaboration.

If you perform vascular surgery or other vascular interventions and work in Canada, we would be delighted to talk with you about joining the CVQI.

I would be happy to hear from you by email at graham.roche-nagle@uhn.ca

Graham Roche-Nagle, MD
Toronto General Hospital

Get started

Canadian Vascular Quality Initiative

Our Canadian Vascular Quality Initiative is a voluntary, cooperative group of clinicians, hospital administrators, and research personnel organized to improve the care of patients with vascular disease.

By collecting and exchanging information, our group strives to continuously improve the quality, safety, effectiveness and cost of caring for patients with vascular disease.
• Resources are now in the VQI Members Only Website
• All PowerPoint Presentations and Poster Session PDFs
• Full Video from the Sessions on Wednesday
Two National QI Projects

The SVS PSO is launching two national initiatives together with implementation tools aimed squarely at using data to improve patient care.

✓ Prescribing anti-platelets and statins to appropriate patients to improve their long-term vascular health (discharge medications)
✓ Increasing follow-up imaging rates at one year for endovascular aneurysm repair patients

The goal for both of these initiatives is 100% compliance. To support increased compliance, the PSO, working with the Arterial Quality Council and the Quality Improvement Workgroup, is developing implementation tools for members, issuing comparative reports and data on improvements over time.
Discharge Medications (available at http://www.vascularqualityinitiative.org/vqi-resource-library/quality-improvement or the members only website)

• Feb. 2017 webinar slides and transcripts (Randy DeMartino from Mayo and Cheryl Jackson from Central DuPage/Northwestern)

• Posters (Gerard DuPrat/Catherine Bringedahl from Memorial Hospital South Bend, Yuming Lin from U of FL and Rosha Nodine from Baylor – winning poster)

• Article highlighting poster winner – The Right Meds for the Right Outcomes in August 2017 Vascular Specialist.
EVAR LTFU Imaging (available at http://www.vascularqualityinitiative.org/vqi-resource-library/quality-improvement or member only website)

- April 2017 webinar slides and transcripts (Adam Beck from UAB and Salvatore Scali from U of FL)
- Posters (Ali Arak/Fern Schwartz from UPMC and Nilima Lovekar and Olympia Christoforatos at Stonybrook)
- Transcripts and slides from June 2017 VQI@VAM panel session: Increasing Follow-up Imaging Rates at 1 Year for EVAR Patients – moderated by Adam Beck and Salvatore Scali and panelists: Julie Beckstrom (U of Utah) Karen Heany (Sharp) Carlos Moreno (Stanford) and Megan Pepin (Ohio State)
- Physician reports on EVAR LTFU: Sent out on August 2, 2017
Topics for the educational webinars in the second half of 2017 include:

**October:** Medicine Registry, Analytic Engine Basics

**November:** Changes to Participation Award, Analytic Engine Advanced

**December:** Difficult Case Abstraction (TBD)
Regional Reports:

Graham Roche-Nagle, MD

Notes:
1) In all reports, regional data are not shown for regions with <3 centers participating in the applicable registry.
2) In “by Center” bar charts, unless noted, data are not shown for centers with <10 cases.
3) In all graphics, “*” indicates a p-value<.05.
4) This report includes all data that had been entered into the VQI as of June 30, 2017.
Dashboard

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

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

Unless otherwise noted, the timeframe for all outcomes is Jan. 1, 2016-May 31, 2017. For more details about each outcome, click on the name of report in the table of contents at left.
| Registry          | Outcome                        | Your Center, % (n/N) | Region [25p|50p|75p] | VQI [25p|50p|75p] |
|-------------------|--------------------------------|----------------------|-------------------------|-----------------|
| All               | Total Procedure Volume         |                      | [88 | 144 | 339]               | [55 | 196 | 434]            |
| Multiple (2014-15)| Long-Term Follow-Up            | NA (<3 centers)      | [43% | 70% | 86%]          |                  |
| Multiple          | Discharge Medications          | [51% | 76% | 80%]               | [71% | 80% | 87%]          |                  |
| AVACCESS          | Primary AVF vs. Graft          | NA (<3 centers)      | [78% | 85% | 94%]               |                  |
| CEA               | In-Hospital Stroke/Death       |                      | [0% | 0% | 1%]               |                  |
| CEA               | LOS>1 Day                      |                      | [14% | 23% | 33%]               |                  |
| EVAR              | LOS>2 Days                     | [19% | 24% | 36%]               | [7% | 13% | 21%]          |                  |
| EVAR (2014-15)    | Sac Diameter at LTFU           | NA (<3 centers)      | [31% | 55% | 70%]               |                  |
| INFRA             | Chlorhexidine Skin Prep        | [67% | 76% | 86%]               | [89% | 98% | 100%]          |                  |
| INFRA             | Major Complications            | [3% | 5% | 7%]               | [0% | 0% | 6%]               |                  |
| IVCF (2016)       | Filter Retrieval               | NA (<3 centers)      | [5% | 15% | 46%]               |                  |
| OAAA              | In-Hospital Mortality          | [0% | 0% | 1%]               | [0% | 0% | 0%]               |                  |
| OAAA              | Median LOS (Days)              | [7.4 | 8.2 | 9.2]               | [6 | 7 | 8]           |                  |
| PVI               | Ultrasound Guidance            | [46% | 76% | 86%]               | [55% | 86% | 97%]          |                  |
| PVI               | ABI/TBI Reported               | [46% | 65% | 74%]               | [60% | 75% | 89%]          |                  |
| VV (2015)         | PROMs at LTFU                  | NA (<3 centers)      | [61% | 100% | 100%]              |                  |
## Total Procedure Volume, All Years (2003-May 2017)

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Your Region (N)</th>
<th>VQI (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS</td>
<td>NA (&lt;3 centers)</td>
<td>13944</td>
</tr>
<tr>
<td>CEA</td>
<td>329</td>
<td>83624</td>
</tr>
<tr>
<td>EVAR</td>
<td>610</td>
<td>32428</td>
</tr>
<tr>
<td>HEMO</td>
<td>NA (&lt;3 centers)</td>
<td>30201</td>
</tr>
<tr>
<td>INFRA</td>
<td>446</td>
<td>36687</td>
</tr>
<tr>
<td>OAAA</td>
<td>330</td>
<td>9312</td>
</tr>
<tr>
<td>PVI</td>
<td>1216</td>
<td>116807</td>
</tr>
<tr>
<td>SUPRA</td>
<td>287</td>
<td>12227</td>
</tr>
<tr>
<td>TEVAR</td>
<td>NA (&lt;3 centers)</td>
<td>8201</td>
</tr>
<tr>
<td>IVCF</td>
<td>NA (&lt;3 centers)</td>
<td>7646</td>
</tr>
<tr>
<td>Varicose Veins</td>
<td>NA (&lt;3 centers)</td>
<td>11949</td>
</tr>
<tr>
<td>LEAMP</td>
<td>NA (&lt;3 centers)</td>
<td>7513</td>
</tr>
<tr>
<td>Overall</td>
<td>3506</td>
<td>370539</td>
</tr>
</tbody>
</table>
Discharge Medications (Jan. 1, 2016-May 31, 2017)
Excludes patients who died in hospital and patients who were not treated for medical reason or non-compliant.

Discharge Antiplatelet+Statin Rate by Center in Your Region (2016-May 2017)

Discharge Antiplatelet+Statin Rate by Region Across VQI (2016-May 2017)

“Others” indicates centers that do not belong to a regional group. “*” indicates region’s rate differs significantly from the VQI rate.
Endovascular AAA Repair: Percentage of Patients with LOS>2 Days (Jan. 1, 2016-May 31, 2017)

Excludes ruptured aneurysms and in-hospital deaths with LOS<=2 days, patients with prior aortic surgery, procedures not done on day of admission and weekend procedures

<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>121</td>
<td>6525</td>
<td></td>
</tr>
<tr>
<td>Observed rate of LOS&gt;2 days among procedures meeting inclusion criteria</td>
<td>21%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Number of procedures with complete data*</td>
<td>107</td>
<td>6058</td>
<td></td>
</tr>
<tr>
<td>Observed rate of LOS&gt;2 among cases with complete data</td>
<td>20%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Expected rate of LOS&gt;2 among cases with complete data*</td>
<td>17%</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>P-value for comparison of observed and expected rates</td>
<td>0.52</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

*“Expected rate” is the rate estimated by a statistical model that accounts for patient characteristics, including age, gender, race, BMI, comorbidities, medication and stroke and vascular history. “Cases with complete data” include patients who have data on all of those factors.
Rate of EVAR Patients With LOS>2 Days in Your Region (2016-May 2017)

- Other centers in your region
- Your center

Centers (centers with <10 cases not shown)

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

Rate of EVAR Patients With LOS>2 Days by Region Across VQI (2016-May 2017)

- Observed
- Expected

"Others" indicates centers that do not belong to a regional group. *** indicates region’s observed rate differs significantly from its expected rate.
Infrainguinal Bypass: Percentage of Procedures with Chlorhexidine or Chlorhexidine+Alcohol Skin Prep (Jan. 1, 2016-May 31, 2017)

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

<table>
<thead>
<tr>
<th></th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of procedures</td>
<td>155</td>
<td>9019</td>
</tr>
<tr>
<td>Rate of chlorhexidine or chlorhexidine+alcohol skin prep</td>
<td>78%</td>
<td>87%</td>
</tr>
<tr>
<td>Rate of chlorhexidine+iodine or chlorhexidine+iodine+alcohol prep</td>
<td>10%</td>
<td>4%</td>
</tr>
<tr>
<td>Rate of in-hospital surgical-site infection</td>
<td>8%</td>
<td>3%</td>
</tr>
</tbody>
</table>
**Percentage With Chlorhexidine or Chlorhexidine+Alcohol Skin Prep in Your Region (2016-May 2017)**

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

Centers (centers with <10 cases not shown)

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

**Percentage With Chlorhexidine or Chlorhexidine+Alcohol Skin Prep by Region (2016-May 2017)**

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

“Others” indicates centers that do not belong to a regional group. “**” indicates region’s rate differs significantly from the VQL rate.
Infrainguinal Bypass: Rate of Major Complications  
(Jan. 1, 2016-May 31, 2017)

Includes only patients with indication of rest pain or tissue loss. Major complications are defined as in-hospital death, ipsilateral BK or AK amputation or graft occlusion. 

percentage of those cases that resulted in in-hospital death, ipsilateral amputation or graft occlusion

<table>
<thead>
<tr>
<th></th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of access procedures meeting inclusion criteria</td>
<td>85</td>
<td>5272</td>
</tr>
<tr>
<td>Percentage with major complications after INFRA</td>
<td>4.7%</td>
<td>4.2%</td>
</tr>
</tbody>
</table>
Rate of Major Complications After INFRA in Your Region (2016-May 2017)

Other centers in your region  Your center

Centers (centers with <10 cases not shown)

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

Rate of Major Complications After INFRA by Region Across VQI (2016-May 2017)


“Others” indicates centers that do not belong to a regional group. ** indicates region’s rate differs significantly from the VQI rate.
Excludes cut-down access guidance

<table>
<thead>
<tr>
<th></th>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of percutaneous femoral procedures</td>
<td>481</td>
<td>31443</td>
</tr>
<tr>
<td>Rate of ultrasound access guidance</td>
<td>90%</td>
<td>69%</td>
</tr>
<tr>
<td>Rate of any hematoma (minor, moderate or major)</td>
<td>4.8%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Rate of moderate or major hematoma</td>
<td>0.8%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Rate of US guidance among cases with closure device</td>
<td>88%</td>
<td>71%</td>
</tr>
<tr>
<td>Rate of US guidance among cases without closure device</td>
<td>94%</td>
<td>60%</td>
</tr>
</tbody>
</table>
**Rate of Ultrasound Access Guidance in Your Region (2016-May 2017)**

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

Centers (centers with <10 cases not shown)

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

**Rate of Ultrasound Access Guidance by Region Across VQI (2016-May 2017)**

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

"Others" indicates centers that do not belong to a regional group. "***" indicates region’s rate differs significantly from the VQI rate.
PVI: Percentage of Claudicants With ABI or TBI Reported Before Procedure  
(Jan. 1, 2016-May 31, 2017)

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

<table>
<thead>
<tr>
<th>Your Region</th>
<th>VQI Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of PVI procedures with indication of claudication</td>
<td>177</td>
</tr>
<tr>
<td>Percentage with ABI/TBI recorded before procedure</td>
<td>79%</td>
</tr>
</tbody>
</table>
Rate of ABI/TBI Assessment Before PVI in Your Region (2016-May 2017)

Other centers in your region  Your center

Centers (centers with <10 cases not shown)

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

Rate of ABI/TBI Assessment Before PVI by Region Across VQI (2016-May 2017)


“Others” indicates centers that do not belong to a regional group. “***” indicates region’s rate differs significantly from the VQI rate.
Dinner
Arterial Quality Council Update: Mary McDonald, MD
• Clarify clinical issues for national QI initiatives, e.g., range of dates for EVAR LTFU (9 – 21 months)
• AQC members collaborating with SVS committee on appropriateness definitions, role of VQI and other specialties, links to reimbursement.
• VQI registry chairs submitted lists of essential variables for each registry.
• Maine Medical Center dashboard used as a guide
• Dan Neal will lead initiative to build center dashboards using essential variables
• Bi-annual dashboards planned for 2018; quarterly issuance for high volume registries TBD.
Research Advisory Council Update
Graham Roche-Nagle, MD
Check Approved Project List:

To submit a proposal to be considered for the National RAC, please follow the link below:
http://abstracts123.com/svs1/meetinglogin
## Proposal Submissions

### October 2017

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call for Proposals:</td>
<td>August 15, 2017</td>
</tr>
<tr>
<td>Due Date:</td>
<td>September 25, 2017</td>
</tr>
<tr>
<td>Meeting:</td>
<td>October 9, 2017</td>
</tr>
<tr>
<td>Notifications Sent:</td>
<td>October 10, 2017</td>
</tr>
</tbody>
</table>
Governing Council Update
Graham Roche-Nagle, MD
– Additional Committee members to be added to the PSO Executive Committee to provide representation for the Community Practice and Office-Based Endovascular Center communities.

– Update on the Clinical Indications Committee

– Update on Registry Development for Q3 and Q4 of 2017
  • PVI Mapping
  • CAS Mapping
  • IVC Filter Retrieval
  • Medicine Registry
  • Addition of Required Fields
  • PSO Audit Tools
GC meeting at VAM

– Update on the SVS exploring a Vascular Certification Program

– Possibility of incorporating Dues to support Regional Meetings, directly into Annual Registry Billing Invoice

– GC Approved the New Policy Governing the Release of data sets including identified Device Data
Centre Opportunity for Improvement

Live Demonstration
Carotid Endarterectomy Length of Stay COPI Report

Your center’s average and median LOS after isolated elective CEA, with standard deviation, are shown in the table below, and compared with all centers in VQI. In addition, your center’s observed and expected percentage of patients with LOS > 1 day are shown, with a statistical calculation of whether this percentage is lower or higher than expected based on the characteristics of patients in your center.

<table>
<thead>
<tr>
<th>Number of procedures</th>
<th>115</th>
<th>11,965</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of stay (days)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>2.7</td>
<td>1.7</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>2.2</td>
<td>5.4</td>
</tr>
<tr>
<td>Median</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

% LOS > 1 day

| Observed | 63% |
| Expected | 45% |

The line graph below shows the percentage of patients with LOS > 1 day as a function of time from 2011 to 2014. The overall VQI overall rate per quarter for your center and VQI are shown. Your center’s rate is compared with VQI rates, with a statistical significance test.

71% of patients have a one day post-op LOS after elective, isolated CEA.

<table>
<thead>
<tr>
<th>Procedure defect</th>
<th>Accident(s)</th>
<th>Recurrent</th>
<th>Hypertension</th>
<th>Diabetes</th>
<th>Heart disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.6</td>
<td>1.0</td>
<td>1.5</td>
<td>1.5</td>
<td>1.3</td>
</tr>
<tr>
<td>2</td>
<td>1.5</td>
<td>1.3</td>
<td>1.0</td>
<td>1.5</td>
<td>0.8</td>
</tr>
<tr>
<td>3</td>
<td>1.5</td>
<td>1.3</td>
<td>1.0</td>
<td>1.5</td>
<td>1.1</td>
</tr>
<tr>
<td>4</td>
<td>1.5</td>
<td>1.3</td>
<td>1.0</td>
<td>1.5</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Factors for LOS > 1 day:
- Age
- Hypertension
- Diabetes
- Heart disease
- Stroke
- Pulmonary embolism
- Other

Your center’s opportunity for improvement (COPI) report provides information on the factors that influence LOS and identifies areas for improvement. The report includes a detailed analysis of patient characteristics, procedures, and outcomes to help your center achieve better patient care.
Carotid Endarterectomy Length of Stay COPI Report

- **Patient Characteristics**
  - Not modifiable, but could be used to focus discharge planning prior to procedure

- **Procedure Details**
  - Could be modified or investigated to improve current practice

- **Post-op Complications**
  - Key opportunities to investigate and improve to reduce LOS

- **Surgeon Volume**
  - Opportunity to change practice of low volume surgeons
Optimal Medical Management Peri-operatively

- 50,000 Patients in VQI who underwent
  - Leg bypass, intervention, oAAA/EVAR, CEA/CAS
- Evaluated pre-operative and discharge medications:
  - Antiplatelet agent (ASA, PY212 inhibitors)
  - Statins (HMG-CoA reductase inhibitors)
- Outcomes analyzed:
  - Effect on patient survival
  - Variation across centers
  - Impact of participation in VQI

-De Martino et al, SVS VAM, June, 2014
Effect of Discharge Medications on Survival

26% Absolute improvement in 5-year survival when patients are discharged on AP & Statin

P<0.001 SE < 0.1
Regional Research Projects:

- Toronto (Naomi Eisenberg)
- Edmonton (Pam Dawe)
- Any new ideas?
1. LOS following EVAR

Retrospective review triggered by
Toronto Projects

Los greater than 2 Days after Elective EVAR

Adjusted for: Age, Gender, Race, COPD, Creatinine (mg/dl), Pre-admin Living, Pre-op ASA / Pre-op P2Y12 Antagonist, Pre-op Statin, Ejection Fraction, Maximum AP AAA Diam, Iliac Aneurysm
2. Iodinated Contrast use in Elective EVAR

- Radiologists/surgeons asked the question
- Used the analytics engine

- Full strength contrast changed to diluted, with no change in image quality

- Change in practice has been maintained.
<table>
<thead>
<tr>
<th>Procedure Variable Name</th>
<th>My Center Results (N=206)</th>
<th>All Other National Participants (N=10,182)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iodinated Contrast (ml)</td>
<td>134.5 ± 60.2; 130.0</td>
<td>108.7 ± 69.7; 97.0</td>
</tr>
</tbody>
</table>

* Value of variable is displayed in format: ‘Mean ± Standard Deviation; Median’
<table>
<thead>
<tr>
<th>Procedure Variable Name</th>
<th>My Center Results (N=191)</th>
<th>All Other National Participants (N=16,369)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iodinated Contrast (ml) *</td>
<td>91.6 ± 42.9; 90.0</td>
<td>95.4 ± 56.4; 85.0</td>
</tr>
</tbody>
</table>

* Value of variable is displayed in format: 'Mean ± Standard Deviation; Median'
3. Smoking Cessation

- Retrospective review 2010-2013
- 869 patients reviewed → 624 patients with complete data
  - 209 (33.5%) smokers pre-op
  - At one-year f/u 87(41.6%) had stopped
  - Cessation rates increased in:
    - > 70 years old
    - COPD
    - Females
Fig 1. Flowchart demonstrating patient numbers of those who were smokers and nonsmokers both preoperatively and postoperatively.
### Toronto Projects

<table>
<thead>
<tr>
<th>Patient and procedure characteristic</th>
<th>Current smokers, (n(%))</th>
<th>Past smokers, (n(%))</th>
<th>Never smokers (n(%))</th>
<th>(P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N total</td>
<td>209</td>
<td>306</td>
<td>109</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>155 (74.2)</td>
<td>247 (80.7)</td>
<td>68 (62.4)</td>
<td>0.001</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age &gt; 70 years</td>
<td>62 (29.7)</td>
<td>189 (61.8)</td>
<td>61 (56.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Age in years (SD)</td>
<td>65 (9.3)</td>
<td>72 (8.6)</td>
<td>72 (10.7)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Previous procedures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CABG</td>
<td>12 (14.6)</td>
<td>30 (20.4)</td>
<td>5 (12.5)</td>
<td>0.36</td>
</tr>
<tr>
<td>PCI</td>
<td>14 (17.1)</td>
<td>26 (17.7)</td>
<td>5 (12.5)</td>
<td>0.73</td>
</tr>
<tr>
<td>CHF</td>
<td>11 (5.3)</td>
<td>27 (8.8)</td>
<td>12 (11)</td>
<td>0.15</td>
</tr>
<tr>
<td>CABG/PCI group</td>
<td>22 (26.8)</td>
<td>48 (32.7)</td>
<td>8 (20)</td>
<td>0.26</td>
</tr>
<tr>
<td>Procedure type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEA</td>
<td>25 (12.0)</td>
<td>49 (16.0)</td>
<td>35 (32.1)</td>
<td></td>
</tr>
<tr>
<td>EVAR</td>
<td>41 (19.6)</td>
<td>109 (25.6)</td>
<td>24 (22.0)</td>
<td></td>
</tr>
<tr>
<td>Infra</td>
<td>42 (20.1)</td>
<td>36 (11.8)</td>
<td>22 (20.2)</td>
<td></td>
</tr>
<tr>
<td>Open</td>
<td>28 (13.4)</td>
<td>47 (15.4)</td>
<td>16 (14.7)</td>
<td></td>
</tr>
<tr>
<td>PVI</td>
<td>29 (13.9)</td>
<td>34 (11.1)</td>
<td>6 (5.5)</td>
<td></td>
</tr>
<tr>
<td>Supra</td>
<td>44 (21.1)</td>
<td>31 (10.1)</td>
<td>6 (5.5)</td>
<td></td>
</tr>
<tr>
<td>Perioperative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urgent</td>
<td>32 (15.3)</td>
<td>43 (14.1)</td>
<td>28 (25.7)</td>
<td></td>
</tr>
<tr>
<td>Emergent</td>
<td>28 (13.4)</td>
<td>23 (7.5)</td>
<td>12 (11)</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>149 (71.3)</td>
<td>240 (78.4)</td>
<td>69 (63.3)</td>
<td></td>
</tr>
<tr>
<td>Discharge destination</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home</td>
<td>189 (90.4)</td>
<td>283 (92.5)</td>
<td>94 (86.2)</td>
<td></td>
</tr>
<tr>
<td>Rehab</td>
<td>10 (4.8)</td>
<td>12 (3.9)</td>
<td>7 (6.4)</td>
<td></td>
</tr>
<tr>
<td>Nursing home</td>
<td>2 (1)</td>
<td>1 (0.3)</td>
<td>1 (0.9)</td>
<td></td>
</tr>
<tr>
<td>Other hospital</td>
<td>8 (3.8)</td>
<td>10 (3.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comorbidities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>163 (78)</td>
<td>265 (86.6)</td>
<td>89 (81.7)</td>
<td>0.037</td>
</tr>
<tr>
<td>Diabetes</td>
<td>58 (27.8)</td>
<td>74 (24.2)</td>
<td>36 (33.0)</td>
<td>0.19</td>
</tr>
<tr>
<td>COPD</td>
<td>50 (24)</td>
<td>64 (20.9)</td>
<td>7 (6.4)</td>
<td>0.001</td>
</tr>
<tr>
<td>Statin use</td>
<td>162 (77.5)</td>
<td>250 (81.7)</td>
<td>81 (74.3)</td>
<td>0.22</td>
</tr>
</tbody>
</table>
Statin and Anti Platelet Project
The Foley Project
Pam Dawe, RN, BScN
VQI Coordinator
Outline

Statin and Anti Platelet Therapies for Vascular Surgery Patients, upon discharge

• Goals
• Who is Involved (Stakeholders)
• How we started
• Maintenance and Future plans

The Foley Project

• Goals
• Stakeholders
• How we started
• Plan of action
Statin and Anti Platelet Therapy

- Our first initiative, started July 24, 2017
- Based on International VQI Guidelines
- Goal is 100% of all vascular surgery patients to be discharged on both a statin and an anti platelet therapy (unless contraindicated)
- Project initiated with assistance from former Grey Nuns Hospital Vascular Surgery Residents; Dr. Mark Assmus and Dr. Ryan McLarty
Statin and Anti Platelet Therapy

Stakeholders:

• Vascular Surgeons
• Interventional Radiologists
• Pharmacy/ Pharmacists
• Hospital Managers for Surgery/ OR
• VQI Coordinator
• Dr. Mark Assmus and Dr. Ryan McLarty (Former Vascular Surgery Residents)
• IT department, Library Support Services

All stakeholders requested Literature to support the new initiative

• Literature search was completed through Covenant Health Library Services
• Findings distributed through email
Statin and Anti Platelet Therapy

Changes we made to Paperwork:

- IMCU Order sets altered to include both Anti Platelet and Statin Therapy
- IMCU to Ward Order sets altered as well
Statin and Anti Platelet Therapy

IMCU and IMCU to Ward Order set example

Anti Platelet and Statin Therapy
☐ acetylsalicylic acid (Aspirin®) 81 mg orally daily*
OR
☐ clopidogrel bisulfate (Plavix®) 75 mg orally daily*
OR
☐ acetylsalicylic acid (Aspirin®) 81 mg orally daily*
   AND clopidogrel bisulfate (Plavix®) 75 mg orally daily*
   AND rosuvastatin (Crestor®) 10 mg orally daily*
OR
☐ other_________________________________ orally daily*
Statin and Anti Platelet Therapy

Changes to Paper work, continued…

• Lipid Profile added to pre operative bloodwork (HDL, LDL, Trig, Total Cholesterol)

• Discharge planning and teaching sheet altered to include a double check for the nurses to ensure medications were ordered.

• Pharmacy created progress note template for patient teaching
Statin and Anti Platelet Therapy

As per the 2016 Canadian Cardiovascular Society Guidelines, if a patient requires additional treatment with a statin for:
- Having a statin-indicated condition.
- Primary prevention for being at high/intermediate risk of experiencing a future CV event/death (Framingham Risk Score of ________).

Statin will not be prescribed if it has previous intolerance/severe chronic liver failure.

**P:** Patient aware and agreeable to start statin ______ mg po qHS.
Educated pt regarding side-effects (e.g. muscle weakness, jaundice, nausea, abdominal pain, dark/amber urine). Pt aware to monitor for these side-effects and to notify physician, nursing, and pharmacist if side-effects occur.
Pt aware to follow-up with family doctor to check lipid panel in 6 weeks to 3 months. Target LDL: ______ mmol/L; Target liver enzymes less than 3xULN. Pt refuses statin therapy due to ______.

Other: ______

**Labs:**
- TC: ______ mmol/L; TG: ______ mmol/L; LDL: ______ mmol/L; HDL: ______ mmol/L; non-HDL: ______ mmol/L
- AST: ______ U/L; ALT: ______ U/L

**ROS:**
- MSK: Patient has no complaints of baseline muscle weakness/pain, fatigue, jaundice
- GI: Patient has no complaints of GI upset/nausea
- GU: Patient has no complaints of dark/amber urine
- Other: ______

Statin and Anti Platelet Therapy

**For Vascular Surgery Patients:**
Statin and Antiplatelet Therapy Prescription

Patient has Prescription for antiplatelet (ASA, Clopidogrel, Ticagrelor) and statin medications (Rosuvastatin, Atorvastatin, Simvastatin). If not, page MD
**Statin and Anti Platelet Therapy**

**Patient Education**

Information sheets are given when patient is discharged home.

**Link to Lexicomp Medication Information**

Medication Information added to computer desk tops on vascular ward and IMCU.

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**Statin and Antiplatelet Therapy**

### What are Statins and Antiplatelets?

**Statin** are medications that help lower your cholesterol, especially your LDL (low density lipoprotein or "bad cholesterol"), and improve circulation even if your cholesterol levels are normal. Antiplatelets are medications that act on blood cells called platelets. When platelets stick together, they form clots. Antiplatelet medications prevent platelets from sticking together.

<table>
<thead>
<tr>
<th>Examples of Statins</th>
<th>Examples of Antiplatelets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosuvastatin (Creator®)</td>
<td>ASA (Aspirin®)</td>
</tr>
<tr>
<td>Atorvastatin (Lipitor®)</td>
<td>Clopidogrel (Plavix®)</td>
</tr>
<tr>
<td>Simvastatin (Zocor®)</td>
<td>Ticagrelor (Brilinta®)</td>
</tr>
</tbody>
</table>

### Why should I take Statins?

- Statins help prevent the buildup of dangerous plaque in your blood vessels. Plaque in your blood vessels could lead to blockages that disrupt blood flow to your legs, your heart, your lungs or your brain.

- Statins help prevent heart attacks, strokes and future vascular surgeries.

- Your arteries can still benefit from a statin, even if your cholesterol is not very high.

### Why should I take Antiplatelets?

- Antiplatelets decrease the stickiness of the platelets in the blood to prevent the formation of blood clots. Preventing a clot from forming in your blood vessels can decrease your chances of having a heart attack, stroke, or further vascular procedures.

- Antiplatelets help prevent clots from forming in stents and grafts.

### Do I need to take both of them?

There is benefit to only taking one or the other; however numerous medical studies have shown the most benefit for patients when both an antiplatelet and a statin are taken.

### What do I do now?

As long as it's best for your care, your surgeon/practitioner will prescribe both a statin and an antiplatelet for you to take when you go home. Ask your doctor, pharmacist and/or nurse for more information about how to take your medications and potential side effects.
Statin and Anti Platelet Therapy

- Resident Orientation Package now includes information about statins and anti-platelet therapies.
- Residents, Extenders and other staff will be given name tag cards for easy double check.

| Anti-Platelet Therapy for Vascular Surgery Patients |
|---------------------------------|-----------------|------------------|
| **Generic Name**          | **Brand Name** | **Standard Dose** |
| Acetylsalicylic Acid      | Aspirin®       | 81 mg orally daily |
| Clopidogrel               | Plavix®        | 75 mg orally daily |

<table>
<thead>
<tr>
<th>Statin Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Generic Name</strong></td>
</tr>
<tr>
<td>Rosuvastatin</td>
</tr>
<tr>
<td>Atorvastatin</td>
</tr>
<tr>
<td>Simvastatin</td>
</tr>
</tbody>
</table>

Choose 1 or both anti-platelet therapies plus a statin therapy unless medically contraindicated. Standard dosing to be used as a guideline only.
Statin and Anti Platelet Therapy

Discharge statins/antiplateletets

Grey Nuns Hospital: 78.60%
Regional (Canada): 81.30%
National (USA/Canada): 75.70%

Current Status as of August 30th, 2017
The Foley Project

- Our second initiative Started July 1, 2017 (retrospective data entry)
- Utilizes Hashtags to gather information not otherwise found in the Pathways M2S data base
- Goal is to assess how Foley Catheters affect length of stay in vascular patients
- Project is separated into 2 phases
The Foley Project

Stakeholders

• Former Vascular Surgery Residents at the Grey Nuns Hospital, Drs. Mark Assmus and Ryan McLarty. Both are currently urology residents at the University of Alberta Hospital

• Vascular Surgeons

• Hospital Managers for Surgery/ OR

• VQI Coordinator
The Foley Project

Phase 1

Recording catheter-related variables in a Canadian VQI database

• Purpose is to assess the feasibility of collecting 3 months of Foley Catheter Related variables by utilizing hashtags

• Collecting data for CEA, EVAR, SIBP and IIBP patients

• Initial data collection will be 6 months.

• Periodic meetings and review of data with stakeholders
The Foley Project

Hashtags
CEA, EVAR, SIBP, IIBP

Pre-Existing Catheter?
•  #[preopF:yes]

Catheter Inserted Intraoperatively?
•  #[opF:yes]

Timing of Foley Catheter Removal
•  #[dc:pod0]
•  #[dc:pod1]
•  #[dc:pod2]
•  #[dc:pod3+]

Patient Discharged home with Foley?
•  #[Fhome:yes]

Postoperative Urinary Retention?
(1st insertion post operatively, or re-insertion post failed dc)
•  #[Retention:yes]

Existing Preop Factors
•  #[BPH]
•  #[alpha-B] (Flomax/Tamulosin w/I year)
•  #[5ARI] (Proscar/finasteride or Avodart/dutasteride w/I year)
•  #[TURP:yes]
The Foley Project

Variables

❖ #[preopF-yes]
  • Rationale is that these patients have additional confounding factors
  • May be censored in future analysis

❖ #[opF-yes]
  • Rationale is this is a significant event that may delay discharge

❖ Length of OR

❖ Length of Stay

❖ Sex

Already VQI variables
The Foley Project

- [dc:pod0], [dc:pod1], [dc:pod2], [dc:pod3+]
  - Rationale is this is an important intervention that when done early, has been shown to reduce complications and perhaps LOS

- [Fhome:yes]
  - Rational is to see if patients are being kept in hospital for catheter related problems vs. being sent home with trial of void protocol
  - This may be a future intervention for a protocol to manage patients who fail catheter removal

- [Retention:yes]
  - Rationale is this is a significant post-operative event
  - Entered as retention for 1st insertion post op, or re-insertion post failed initial removal
The Foley Project

Pre-existing Pre-op Factors

- #[BPH:yes]
- #[alpha-B:yes] (Flomax®/ Tamulosin w/1 year)
- #[5ari:yes] (Proscar®/ finasteride or Avodart®/ dutasteride w/1 year)
- #[TURP:yes] (any history of TransUrethral Resection of the Prostate in the past)
The Foley Project

Phase 2

Establish and define baseline data

Utilize Plan-Do-Study-Act cycles for optimizing completeness and appropriateness of variables captured

Brainstorm catheter related VQI interventions

Spring 2018 – Initiate QI interventions and Capture ongoing data
The Foley Project & Statins and Anti Platelet Therapy

Questions?
Thank You
Other ideas?
• Agree Next Meeting
• April 2018, Winnipeg, MB,