Vascular Quality Initiative®

Mid-America
Vascular Study Group

Iowa Heart Center

West Des Moines, IA

April 11, 2016

9:00 am-3:00pm

SVS Society for Vascular Surgery

m2s

Society for Vascular Medicine

Vascular Quality Initiative®

Agenda

I. Welcome and Introductions
II. Review and approval of minutes
III. Old Business
IV. National update – Carrie Bosela
V. Medical Director – Joe Schneider, MD
- Review of regional data

VI. Arterial Quality Committee Chair – Todd Vogel, MD/Carrie Bosela
VII. Research Committee Chair – Andrew Hoel, MD
VIII. Venous Quality Committee Representative – Sapan Desai, MD/Carrie Bosela
- Studies – Completed, Approved/Underway, and Pending Approval

X. Governing Council Update: Joe Schneider, MD
XI. QI/PI Projects
- Andrew Hoel, MD
- Cynthia Bik, RN – CES
- Jose Borromeo, MD
- Kamal Gupta, MD
- Harold Hsu, MD

XII. Data Managers' Report – Cynthia Bik, RN
XIII. Funding for meetings – Carrie Bosela
XIV. Round Table
XV. Next meeting – Sept 7, 2016 Columbus, OH (to coincide with MVSS) 10am-4pm Place – TBD
- Spring 2017 – KUMC – Kansas City, Kansas Date – TBD
- Fall 2017 – Conjunction with MVSS
- Spring 2018 – Peoria has offered to host. Marlene Hunteman to discuss.

Lunch approximately 12:00

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Welcome and Introduction

Central DuPage Hospital
Iowa Heart Center at Mercy Medical Center
Mercy Hospital Springfield
Mercy Hospital St. Louis
NorthShore Hospital
Northwestern Memorial Hospital
OSF Saint Anthony Medical Center
OSF Saint Francis Medical Center
OSF St. Joseph Medical Center
SSM DePaul Health Center
SSM St. Clare Health Center
SSM St. Joseph Health Center
SSM St. Mary's Health Center
Saint Luke's Episcopal Presbyterian Hospital
Southern Illinois University School of Medicine
St. Mary's Hospital - Decatur
The Practice of Stephen M. Ryan- MD
UnityPoint Health - Methodist
UnityPoint Health - Proctor Hospital
UnityPoint Health Des Moines
University of Chicago Medical Center
University of Kansas Hospital Authority
University of Missouri Medical Center
Weiss Memorial Hospital

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Approval of Minutes

- any old business to discuss

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National VQI Update:

Carrie Bosela

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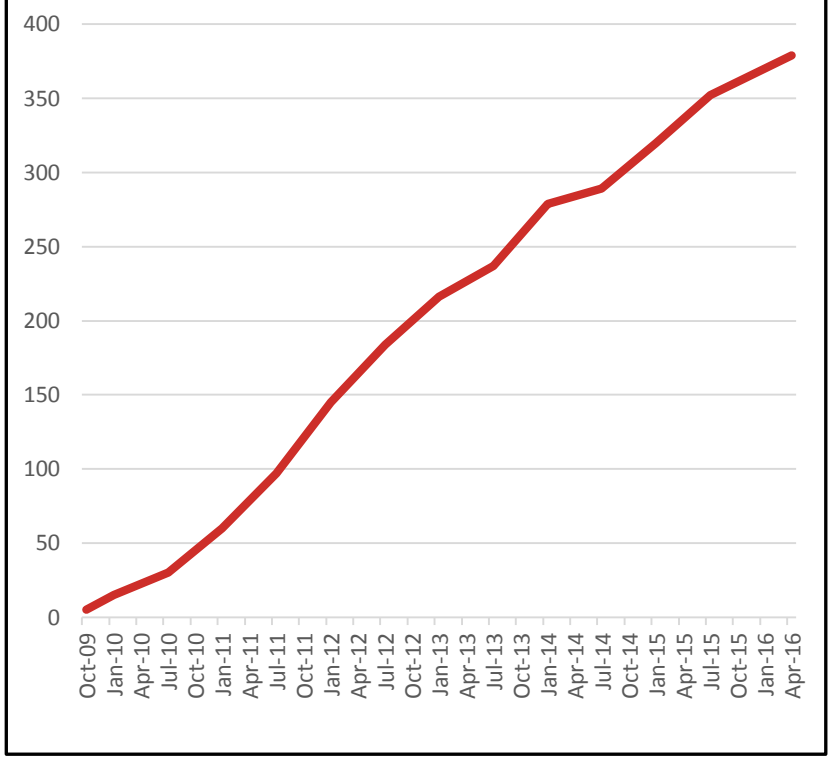
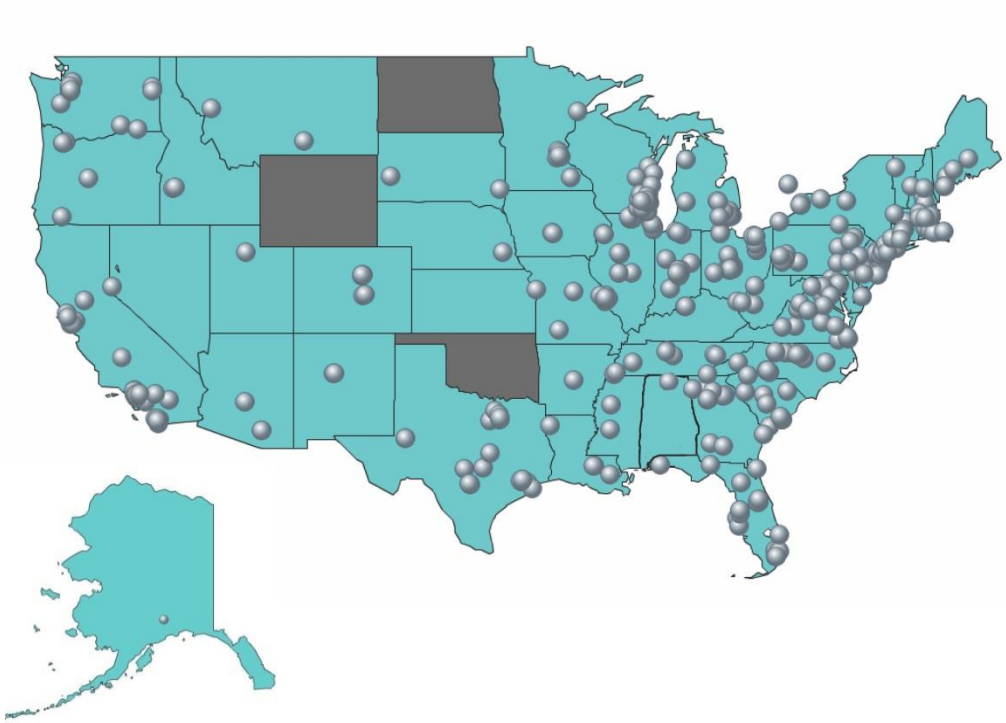
Participating Center Growth



VQI Participating Centers



379 Centers, 46 States + Ontario

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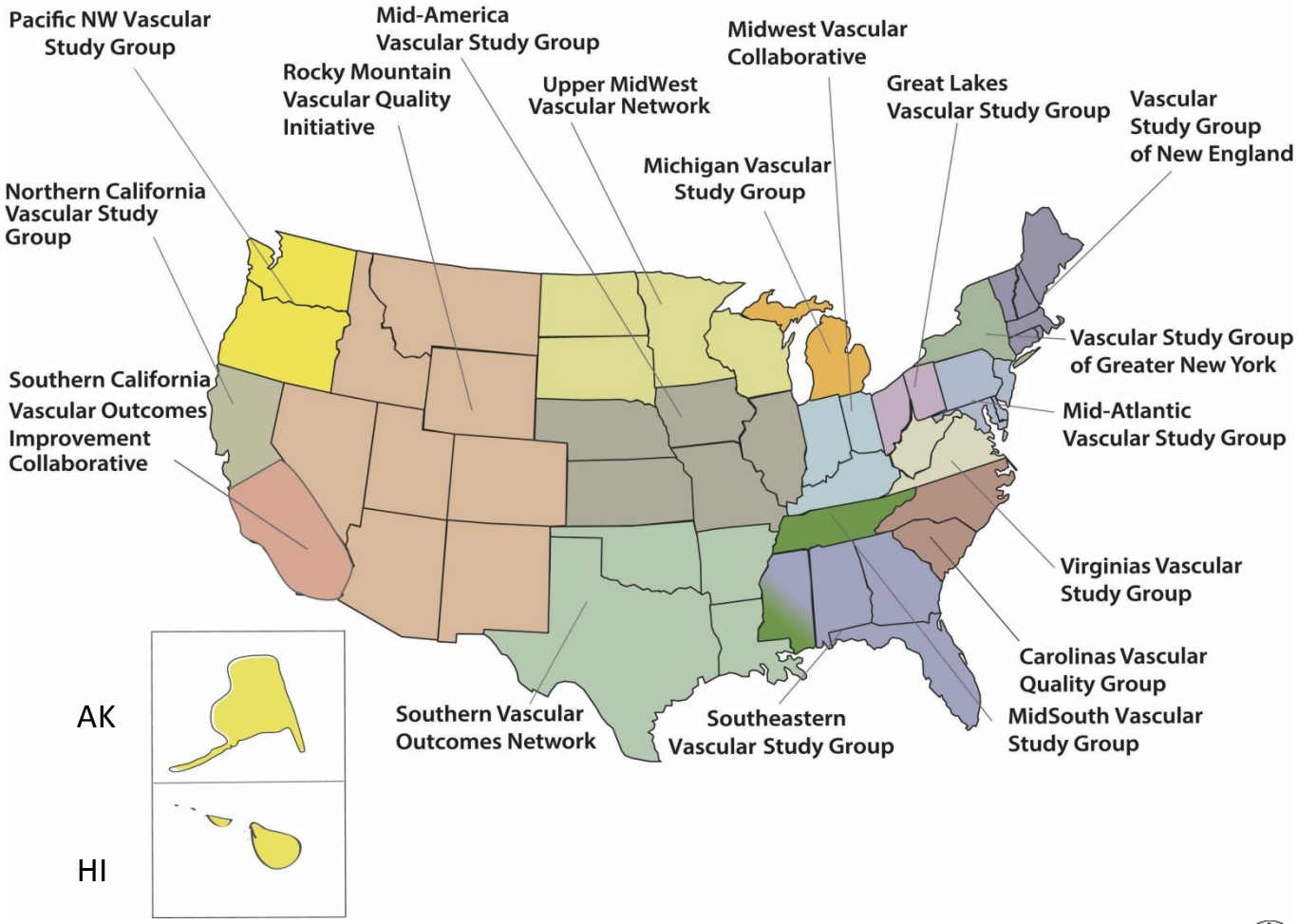
17 Regional Quality Groups



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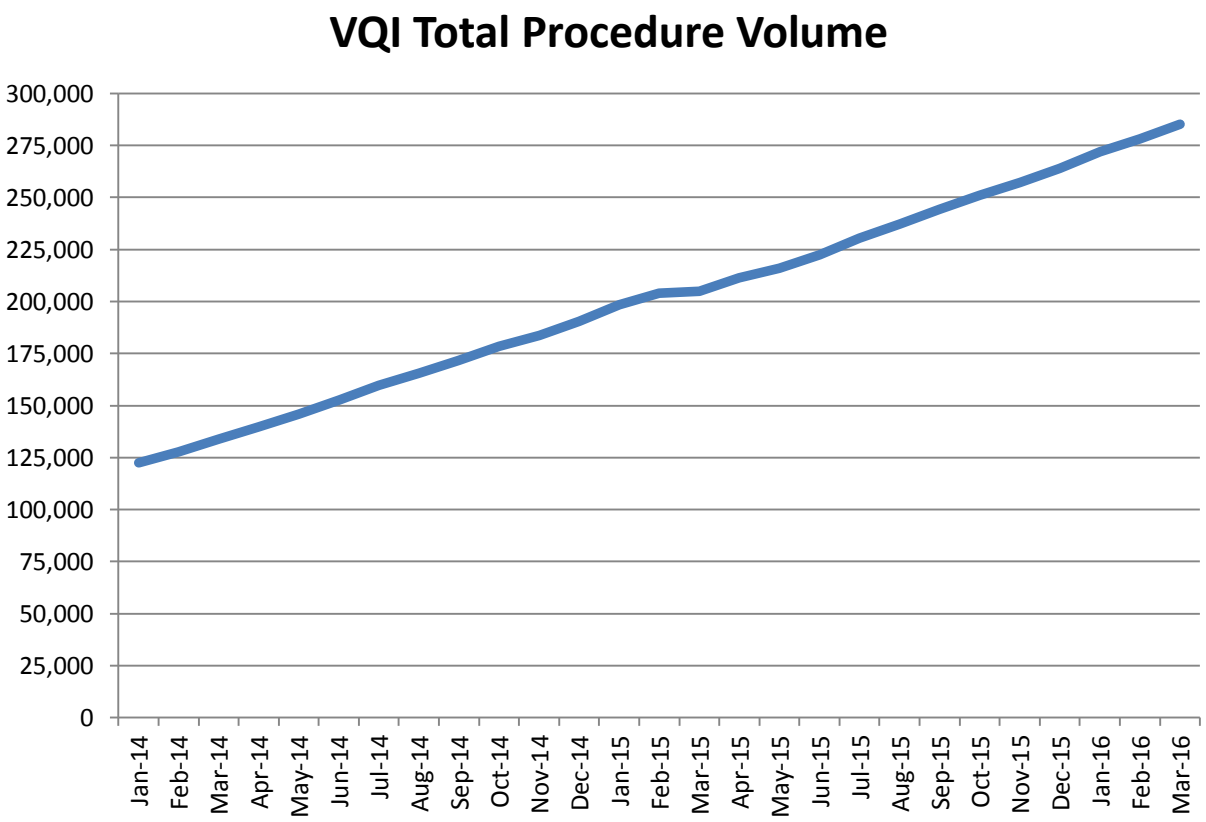
Total Procedures Captured (as of 4/1/2016)	285,087
Peripheral Vascular Intervention	89,830
Carotid Endarterectomy	65,692
Infra-Inguinal Bypass	29,775
Endovascular AAA Repair	26,243
Hemodialysis Access	24,473
Carotid Artery Stent	10,725
Supra-Inguinal Bypass	10,155
Open AAA Repair	8,101
Thoracic and Complex EVAR	6,018
IVC Filter	5,211
Lower Extremity Amputations	5,034
Varicose Vein	3,830



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VQI 1st Annual Meeting

June 8, 2016

- 8:00am to 12:00 pm Data Managers Session
  - Interactive Panel Discussion on Key Registry Topics
  - PVI case abstraction
  - Producing and Interpreting Reports

- 12:00pm to 5:00pm All VQI Participants
  - Key Note Speaker: Dr. Englesbe
  - Utilizing Registries for QI Opportunities: Dr. Ted James
  - VQI QI success stories: Memorial South Bend, Carolinas Vascular Quality Initiative, Beaumont Health System, El Camino

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VQI Participation Award

Participation Award

Meeting-Participation Score*

(based on Fall 2015 meeting attendance: max 3)

- No MD from site attends = 0 points
- 1 MD from site attends = 1 point
- 2 MDs attend (or 1 MD if site has only 2 MDs) = 2 points
- 3 MDs attend (or all MDs if site has <3 MDs) = 3 points

*Additional health professional staff attendance (Data Manager, Admin, NP, PA, Fellow, etc.,) = one additional point if 1 MD attended. Phone attendance does count!

Participation Award

Long-Term Follow-Up Score

(based on 2013 procedures)

- <70% mean LTFU in all registries = 0 points
- 70% mean LTFU in all registries = 1 point
- 80% mean LTFU in all registries = 2 points
- 90% mean LTFU in all registries = 3 points

Participation Award

Registry-Subscription Score

(as of December 2015)

- Subscribe to 1-2 registries = 0 points
- Subscribe to 3-5 registries = 1 point
- Subscribe to 6-8 registries = 2 points
- Subscribe to 9-12 registries = 3 points

Participation Award

- Zero stars: < 3 points
- One star: At least 3 points
- Two stars: At least 5 points
- Three stars: At least 7 points

2016 Participation Award Results

- 0 stars: 113 centers
- 1 star: 76 centers
- 2 stars: 82 centers
- 3 stars: 37 centers

Long Term Follow UP < 50%

- Centers with LTFU less than 50% will receive mentoring from a peer advisor and a LTFU toolkit from the PSO to assist then in improving their LTFU rates
- This toolkit in the resource tab of the VQI website

Long Term Follow UP < 50%

- Centers on probation cannot receive data for research until their LTFU is >50%
- Centers on probation will continue to receive regional reports that look at a long term outcomes, but their center data will not be calculated, because it is not judged to be accurate if LTFU is < 50%.
- Centers on probation will not be permitted to participate in new industry-sponsored projects to assess device performance if LTFU is included in these projects, since complete reporting is critical for these projects.

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VQI tools for success

- Resource Library
- Cardiac Risk Predictor
- VQI Risk Model – Carotid Endarterectomy
- VQI Risk Model – EVAR
- VQI Risk Model – Infra-inguinal Bypass
- VQI Risk Model – Open AAA Repair
- Time Savings Calculator
- LTFU Toolkit: Follow Up Card Template
- LTFU Toolkit: Suggestions for Success
- DC Medication Flyer

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Vascular Quality Initiative®

It's important to see your physician for your follow up appointment to:

Delete this and Insert Logo here

- Monitor your post-procedure care
- Understand any complications
- Discuss your medications

Vascular Quality Initiative®

A national quality program of over 2,800 specialist physicians dedicated to improving vascular care, with the Society of Vascular Surgery, American Venous Forum and Society for Vascular Medicine.

FOLLOW UP APPOINTMENT

To ensure your vascular health

Delete this and Insert Logo here

Your specialist:	**(physician name)**
Follow up visit:	**(date)**
Location:	**(facility)**

As members of the Vascular Quality Initiative®, you and your physician can work together to improve your vascular health.

www.vascularqualityinitiative.org

VQI Best Practices

- A physician champion is critical to the success of LTFU. The physician champion communicates to his/her VQI team that LTFU is essential for good patient care and improved outcomes.
- Report cards that display the center's current LTFU rate and track improvement should be provided weekly or monthly to the VQI team (see how to run a report in Appendix). Report cards might also include lists of VQI patients who are due or past due for a follow-up visit.
- Some sites have tied hospital credentialing and staff evaluations/raises to the success of achieving LTFU of 80% or greater.

VQI Best Practices

- Start reviewing electronic records at the 9-month post-procedure time point
- Send a list of patients who need a follow-up appointment to office staff
- Key is to make a follow-up appointment at the time of the surgical procedure
- If no vascular appointment will be made inside the window of 9-21 months post procedure, use another appointment (i.e. PCP, endocrine, cardiac, oncology) to collect data
- If the patient will not be returning for an appointment, call at home. Calling outside of work hours is often successful
- Call the emergency contact in the medical record, if unable to reach the patient directly
- Internet Search- patient's name and city will bring up obituaries, new addressed or other family members to contact
- Email the patient if the address is given in the medical record.

Medicine Registry Update

Medicine Registry

- Scope
  - Medical management of:
    - Lower extremity PAD
    - Carotid stenosis
    - AAA
  - New outpatient consults that require follow up
  - One year follow up required, longer possible

Medicine Registry

- Progress
  - Variables/Definitions should be complete in May 2016
  - M2S will mock up the specs by June 2016
  - Webinars and public comment in July 2016
  - Release sometime 2016 3rd or 4th Quarter

Physician and COPI Reports (Center Opportunity Profile for Improvement)

2016 planned reports:

- CEA stroke/death
- CAS stroke/death
- PVI Hematoma rate
- One year survival after elective small thoracic aneurysm repair
- One year survival after elective small abdominal aneurysm repair

EVAR Cost Pilot: MedAssets

- 18 VQI sites participating in Pilot
  - Understanding the economics of vascular procedures is critically important
  - Combined hospital cost data (MedAssets) with detailed clinical data (VQI) to accurately benchmark similar procedures

EPIC Update

- Dr. Michael Stoner and Lisa Spellman at University of Rochester
  - Working with Epic to build CEA form that can be transferred via JSON file to M2S
  - Work should be done and ready for testing end of April 2016
  - “How to” documentation will be shared with all VQI EPIC users

Regulatory

- Meaningful Use
- MACRA
- MIPS
- QCDR/PQRS

Meaningful Use

VQI meets objective 10, measure 3: use of a specialized registry for meaningful use per CMS

only if members subscribe and use

"DATA IMPORT"

Meaningful Use

Letter of Intent on the VQI web:

http://www.vascularqualityinitiative.org/wp-content/uploads/Registration-of-Intent-V2.pdf

MACRA

- MIPS and APMs are two payment alternatives that encourage value based rather than volume based reimbursement.
- Physicians who receive payment from Medicare are required to participate in MIPS or APMs.
- Specifications and requirements are still being finalized by CMS.

MACRA

- Separate payment adjustments under PQRS, VM and EHR-MU will end 12/31/2018
- 1/1/2019- MIPS and APM incentive payments begin
- Eligible Providers can participate in MIPS or meet requirements to be qualifying APM participant

Merit-Based Incentive Payment System (MIPS)

- MIPS begins with payment adjustments in 2019 based on quality data reported in 2017. MIPS adjustments, either positive or negative will start at 4% up to 9% in 2022.
- MIPS scores will be based on 4 domains; quality of care, resource use, meaningful use of EHRs and participation in clinical practice improvement activities – these are still being finalized by CMS.

Alternative Payment Models (APMs)

- For APMs, beginning in 2019, physicians who successfully participate in an APM can receive incentive payments of 5% per year. It requires some financial risk for the provider and requirements can be met if a provider is in a patient centered medical home or ACO. Providers must meet increasing thresholds annually for percentage of revenue received through APMS.
- SVS is developing a *disease specific APM for vascular surgeons* in collaboration with ACS and researchers from Brandeis University who developed the original episode payment program for CMS.

PQRS/QCDR

- Physician Quality Reporting System
- Qualified Clinical Data Registry (VQI)
- 2015: negative payment adjustment for unsatisfactory reporting on PY 2013
  - 1.5% adjustment
- Report satisfactorily in 2015 PY to avoid 2017 PQRS negative payment adjustment
- 2% adjustment in 2016

Pathways Development Update

Enter New / Find Existing Patients | Tools | Resources | Share a File | Analytics & Reporting Engine

Analytics & Reporting Engine

Home | Define Report | View My Results

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Report Name: Elective Endo AAA Repair

Procedure Type(s): Endo AAA Repair

View: ◉ Center ○ Physician [+] Select Centers

☐ Hide Health System Results

Update Report

Results

Procedure Variable Name	Generic Medical Center (N = 159)	My Health System (N = 3412)
Height (inches)	64.6 ± 3.5; 66.0	64.6 ± 3.5; 66.0
Race		
American Indian or Alaskan Native	0.2% (3)	0.2% (137)
Black or African American	18.6% (28)	18.6% (376)
Native Hawaiian or other Pacific Islander	0.1% (1)	0.1% (57)
White	80.4% (121)	80.4% (2789)
More than 1 race	0.1% (1)	0.1% (48)
Unknown / Other	0.6% (5)	0.6% (5)
Death		
No	99% (157)	99% (3410)
Yes	0% (0)	0% (0)
Missing Value or N/A	1% (2)	1% (2)

Data Management | F

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Report Name: Elective Endo AAA Repair

Procedure Type(s): Endo AAA Repair

View: (•) Center ( ) Physician [+] Select Centers

1 Selected ▼ Close

- [x] Generic Medical Center
- [ ] John Smith Medical Center
- [ ] John Doe Medical Center
- [ ] Jane Smith Medical Cer
- [ ] Jane Doe Medical Center

[ ] Hide Health System Results

Update Report

Results

Procedure Variable Name	Generic Medical Center (N = 159)	My Health System (N = 3412)
Height (inches)	64.6 ± 3.5; 66.0	64.6 ± 3.5; 66.0
Race		
American Indian or Alaskan Native	0.2% (3)	0.2% (137)
Black or African American	18.6% (28)	18.6% (376)
Native Hawaiian or other Pacific Islander	0.1% (1)	0.1% (57)
White	80.4% (121)	80.4% (2789)

Edit

Download as PDF

Report Name: Elective Endo AAA Repair

Procedure Type(s): Endo AAA Repair

Regional Group: Trial Registry

PSO Benchmarking: ☑ Center ☑ Regional ☑ National

View: ○ Center ◉ Physician Select Physicians

☐ Hide Health System Results

Update Report

Results

Procedure Variable Name	Generic Medical Center (N = 159)	John Smith (N=250)	Jane Smith (N=250)	My Health System (N = 3412)	All Other Regional Participa (N = 15300)	All Other National Participa (N = 159500)	Charts	Reg lvl
Height (inches)	64.6 ± 3.5; 66.0	64.6 ± 3.5; 66.0	64.6 ± 3.5; 66.0	64.6 ± 3.5; 66.0	64.6 ± 3.5; 66.0			
Race								
American Indian or Alaska	0.2% (3)	0.2% (3)	0.2% (3)	0.2% (137)	0.2%	0.2%		
Black or African American	18.6% (28)	18.6% (28)	18.6% (28)	18.6% (376)	18.6%	18.6%		
Native Hawaiian or other Pa	0.1% (1)	0.1% (1)	0.1% (1)	0.1% (57)	0.1%	0.1%		
White	80.4%(121)	80.4% (121)	80.4% (212)	80.4% (2789)	80.4%	80.4%		
More than 1 race	0.1% (1)	0.1% (1)	0.1% (1)	0.1% (48)	0.1%	0.1%		
Unknown / Other	0.6% (5)	0.6% (5)	0.6% (5)	0.6% (5)	0.6%	0.6%		
Death								
No	99% (157)	99% (15)	99%	99%	99%			
Yes	0% (0)	0% (0)	0% (0)	0%	0%	0%		
Missing Value or N/A	1% (2)	1% (2)	1% (2)	1%	1%	1%		

Data Management

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Report Name: Elective Endo AAA Repair

Procedure Type(s): Endo AAA Repair

View: (•) Center ( ) Physician [+] Select Centers

[ ] Hide Health System Results

Update Report

Results

Procedure Variable Name	Generic Medical Center (N = 159)	John Smith Medical Center (N = 250)	My Health System (N = 3412)
Height (inches)	64.6 ± 3.5; 66.0	64.6 ± 3.5; 66.0	64.6 ± 3.5; 66.0
Race			
American Indian or Alaskan Native	0.2% (3)	0.2% (3)	0.2% (137)
Black or African American	18.6% (28)	18.6% (28)	18.6% (376)
Native Hawaiian or other Pacific Island	0.1% (1)	0.1% (1)	0.1% (57)
White	80.4% (121)	80.4% (212)	80.4% (2789)
More than 1 race	0.1% (1)	0.1% (1)	0.1% (48)
Unknown / Other	0.6% (5)	0.6% (5)	0.6% (5)
Death			
No	99% (157)	99% (248)	99% (3410)
Yes	0% (0)	0% (0)	0% (0)
Missing Value or N/A	1% (2)	1% (2)	1% (2)

Data Management | PSO | Admin

Enter New / Find Existing Patients | Tools | Resources | Share a File | Analytics & Reporting Engine

Analytics & Reporting Engine

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Report Name: Report001
Procedure Type(s): Carotid Artery Stent, Carotid Endarterectomy, Infra-inguinal bypass, Peripheral Vascular Intervention

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z ALL

Results // Patient List

Race = American Indian or Alaskan Native

search

Registry	First Name	Last Name	Procedure Date	MRN	Physician	
Carotid Artery Stent	Test1	Patient1	01/01/2012	001	Physician 1	View
Infra-inguinal Bypass	Test2	Patient2	12/11/2014	002	Physician 2	View
Peripheral Vascular Intervention	Test3	Patient3	12/23/2014	003	Physician 3	View
Carotid Artery Stent	Test1	Patient4	01/01/2012	001	Physician 1	View
Infra-inguinal Bypass	Test2	Patient5	12/11/2014	002	Physician 2	View
Peripheral Vascular Intervention	Test3	Patient6	12/23/2014	003	Physician 3	View
Carotid Artery Stent	Test1	Patient7	01/01/2012	001	Physician 1	View
Infra-inguinal Bypass	Test2	Patient8	12/11/2014	002	Physician 2	View
Peripheral Vascular Intervention	Test3	Patient9	12/23/2014	003	Physician 3	View
Carotid Artery Stent	Test1	Patient10	01/01/2012	001	Physician 1	View
Infra-inguinal Bypass	Test2	Patient11	12/11/2014	002	Physician 2	View
Peripheral Vascular Intervention	Test3	Patient12	12/23/2014	003	Physician 3	View
Carotid Artery Stent	Test1	Patient13	01/01/2012	001	Physician 1	View
Infra-inguinal Bypass	Test2	Patient14	12/11/2014	002	Physician 2	View
Peripheral Vascular Intervention	Test3	Patient15	12/23/2014	003	Physician 3	View
Carotid Artery Stent	Test1	Patient16	01/01/2012	001	Physician 1	View
Infra-inguinal Bypass	Test2	Patient17	12/11/2014	002	Physician 2	View
Peripheral Vascular Intervention	Test3	Patient18	12/23/2014	003	Physician 3	View
Carotid Artery Stent	Test1	Patient19	01/01/2012	001	Physician 1	View
Infra-inguinal Bypass	Test2	Patient20	12/11/2014	002	Physician 2	View
Peripheral Vascular Intervention	Test3	Patient21	12/23/2014	003	Physician 3	View
Carotid Artery Stent	Test1	Patient22	01/01/2012	001	Physician 1	View
Infra-inguinal Bypass	Test2	Patient23	12/11/2014	002	Physician 2	View
Peripheral Vascular Intervention	Test3	Patient24	12/23/2014	003	Physician 3	View
Carotid Artery Stent	Test1	Patient25	01/01/2012	001	Physician 1	View
Infra-inguinal Bypass	Test2	Patient26	12/11/2014	002	Physician 2	View
Peripheral Vascular Intervention	Test3	Patient27	12/23/2014	003	Physician 3	View
Carotid Artery Stent	Test1	Patient28	01/01/2012	001	Physician 1	View
Infra-inguinal Bypass	Test2	Patient29	12/11/2014	002	Physician 2	View
Peripheral Vascular Intervention	Test3	Patient30	12/23/2014	003	Physician 3	View

Vascular Quality Initiative®

Medstreaming™ The Practice of Innovation + m2s

Medstreaming Announces Acquisition of Registry Software Vendor M2S

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Vascular Quality Initiative®

Medstreaming
Workflow solutions
EMR integration
Data Analytics
Image Management

M2S
Clinical Registries
Clinical Research
Imaging

Together we will create efficiency, facilitate data collection for the VQI, and expand the VQI data analytics platform

- ✓ You will continue to work with the same people. All of our employees are being retained in their current roles.
- ✓ Our office will remain in West Lebanon, New Hampshire.
- ✓ Phone numbers and emails are all still the same.
- ✓ The VQI will continue to work with all EMR vendors.

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2016 Q1 Projects

- **Develop new PVI registry**
  - New procedure and follow-up forms
  - Concomitant procedure feature with INFRA and SUPRA
  - Device data integration with/ import of FDA UID/GUDID registry
  - QCDR/PQRS measure updates for 2 PVI QCDR process measures, 1 PVI QCDR outcome measure, and 2 PVI PQRS measures
  - Standard data import for new PVI registry
- **Add IDE devices on EVAR and TEVAR registries**

TEVAR Dissection Postmarket Surveillance

- Sponsors: Medtronic and W.L. Gore
- Sites have received $519,800 as of 12/31/2015 as compensation for their time.
- FDA has received 2 summary reports (non-identifiable data)
- Steering Committee is drafting an initial journal article highlighting the project design and the impact on quality improvement
- 5 year participation in acute arm is complete!!!!

Cohort	Enrolling new sites	Number of Sites	Number of Patients	Follow Up	Reimbursement
5 Year	No	50	400 (389 patients enrolled)	At 30 days and annually for 5 years	**Per Subject: $4,000** - $1300 Initial Treatment - $400 Each follow up visits - - $700 Final 5 year follow up $700 Add' l intervention
1 Year	**Yes**	Up to 50	200 (46 patients enrolled)	Annually for 1 year	$400 for each procedure with a completed 1 year follow up

Lombard Aorfix Postmarket Surveillance

- Sponsor: Lombard Medical
- EVAR Registry
- Sites have received $43,500 as of 12/31/2015 as compensation for their time.
- Lombard has received 2 data reports (non-identifiable data)

Enrolling	Number of Sites	Number of Patients	Follow Up	Reimbursement
Yes	50	234 (35 patients enrolled)	At 30 days and annually for 5 years	**Per Subject: $4,000** - $1300 Initial Treatment - $400 Each follow up visits - - $700 Final 5 year follow up $700 Add' l intervention

CREST 2 Registry Project

- CAS Registry with Supplemental 1-page form
- Enrolling
- 64 Physicians are participating through VQI
- Objectives
  - Promote rapid initiation and completion of enrollment in the CREST-2 trial
  - Ensure that CAS is performed by adequately experienced operators within CREST-2 and C2R
  - Closely monitor clinical outcomes of C2R patients
  - Prevent inappropriate use of CAS outside of C2R
- C2R Investigators have received 10 reports
  - Patient-level data is non-identifiable per HIPAA
  - Physician and center names are transferred IAW project data sharing agreement

Spring 2016 MAVSG
IHC 4.11.16

Our experience with CMS NCD 20.7

So why do I want to talk about this today?

We would like to hear how your center handles these patients to help us serve our patients the best way possible.

IHC CAS Vascular Quality Initiative Registry Results

3.15.2016

Cynthia Bik RN BSN, SVS VQI Coordinator

Carotid Artery Stents – National Coverage Determination (NCD) for Percutaneous Transluminal Angioplasty (PTA) (20.7)

<< Back to National Coverage Determination (NCD) for Percutaneous Transluminal Angioplasty (PTA)

National Coverage Determination (NCD) for Percutaneous Transluminal Angioplasty (PTA) (20.7)

Select the **Print Complete Record**, **Add to Basket** or **Email Record** Buttons to print the record, to add it to your basket or to email the record.

Print Complete Record
Add to Basket
Email Record

Expand All | Collapse All

Tracking Information

Publication Number	Manual Section Number	Manual Section Title
100-3	20.7	Percutaneous Transluminal Angioplasty (PTA)
Version Number	**Effective Date of this Version**	**Implementation Date**
10	1/1/2013	3/11/2013
Implementation QR Modifier Date		

Taken from Decision Memo for Carotid Artery Stenting (CAG-00085R)

- Each institution should have a clearly delineated program for granting carotid stent privileges and for monitoring the quality of the individual interventionalists and the program as a whole. The oversight committee for this program should be empowered to identify the minimum case volume for an operator to maintain privileges, as well as the (risk-adjusted) threshold for complications that the institution will allow before suspending privileges or instituting measures for remediation.[2] Committees are encouraged to apply published standards from national specialty societies recognized by the American Board of Medical Specialties[3] to determine appropriate physician qualifications. Examples of standards and clinical competence guidelines include those published in the December 2004 edition of the American Journal of Neuroradiology[4], and those published in the August 18, 2004 Journal of the American College of Cardiology.[5]

- To continue to receive Medicare payment for CAS under this decision, the facility or a contractor to the facility must collect data on all carotid artery stenting procedures done at that particular facility. This data must be analyzed routinely to ensure patient safety, and will also be used in the process of re-credentialing the facility. This data must be made available to CMS upon request. The interval for data analysis will be determined by the facility but should not be less frequent than every 6 months.

First of two CMS 20.7 institution requirements:

Each institution should have a clearly delineated program for granting carotid stent privileges and for monitoring the quality of the individual interventionalists and the program as a whole. The oversight committee for this program should be empowered to identify the minimum case volume for an operator to maintain privileges, as well as the (risk-adjusted) threshold for complications that the institution will allow before suspending privileges or instituting measures for remediation.[2] Committees are encouraged to apply published standards from national specialty societies recognized by the American Board of Medical Specialties[3] to determine appropriate physician qualifications. Examples of standards and clinical competence guidelines include those published in the December 2004 edition of the American Journal of Neuroradiology[4], and those published in the August 18, 2004 Journal of the American College of Cardiology.[5]

1.) Every 6 months I present the Carotid Artery Stent data I pull from the SVS VQI to the Interventional Cardiologists. I present this data at one of their monthly M & M meetings.

I believe this will satisfy the CMS decision Memo requirement for a “clearly delineated program for granting carotid stent privileges and for monitoring the quality of the individual interventionists and the program as a whole”.

Second facility requirement for CMS 20.7

To continue to receive Medicare payment for CAS under this decision, the facility or a contractor to the facility must collect data on all carotid artery stenting procedures done at that particular facility. This data must be analyzed routinely to ensure patient safety, and will also be used in the process of re-credentialing the facility. This data must be made available to CMS upon request. The interval for data analysis will be determined by the facility but should not be less frequent than every 6 months.

2.) As above – "data analysis must be done routinely and used in the process of re-credentialing the facility. This should not be less frequent than every 6 months".
In addition, I must send a list of **ALL** CAS patients to CMS every 6 months using a CMS data entry and submission process. This data can be exported from the VQI in the exact format that is required to complete the CMS form.

In addition, there is also a CAS facility re-certification process that must be completed every two years. Facilities that do not maintain certification will no longer be eligible for Medicare reimbursement for those services.

So why do I think our four brilliant Vascular Surgeons need to care so much about NCD 20.7??

I believe the process, as intended by CMS, is designed to start with a surgeon as follows – Patients who are at high risk for CEA…….

This is the actual decision summary - Decision Memo for Carotid Artery Stenting (CAG-00085R)

Decision Summary

The Centers for Medicare and Medicaid Services (CMS) has determined that the evidence is adequate to conclude that carotid artery stenting (CAS) with embolic protection is reasonable and necessary for the following:

1. Patients who are at high risk for carotid endarterectomy (CEA) and who also have symptomatic carotid artery stenosis ≥ 70%. Coverage is limited to procedures performed using FDA approved carotid artery stenting systems and embolic protection devices;
2. Patients who are at high risk for CEA and have symptomatic carotid artery stenosis between 50% and 70%, in accordance with the Category B IDE clinical trials regulation (42 CFR 405.201), as a routine cost under the clinical trials policy (Medicare NCD Manual 310.1), or in accordance with the National Coverage Determination on CAS post approval studies (Medicare NCD Manual 20.7);
3. Patients who are at high risk for CEA and have asymptomatic carotid artery stenosis ≥ 80%, in accordance with the Category B IDE clinical trials regulation (42 CFR 405.201), as a routine cost under the clinical trials policy (Medicare NCD Manual 310.1), or in accordance with the National Coverage Determination on CAS post approval studies (Medicare NCD Manual 20.7).

Patients at high risk for CEA are defined as having significant comorbidities and/or anatomic risk factors (i.e., recurrent stenosis and/or previous radical neck dissection), and would be poor candidates for CEA in the opinion of a surgeon. Significant comorbid conditions include but are not limited to:

- congestive heart failure (CHF) class III/IV;
- left ventricular ejection fraction (LVEF) < 30%;
- unstable angina;
- contralateral carotid occlusion;
- recent myocardial infarction (MI);
- previous CEA with recurrent stenosis ;
- prior radiation treatment to the neck; and
- other conditions that were used to determine patients at high risk for CEA in the prior carotid artery stenting trials and studies, such as ARCHER, CABERNET, SAPPHIRE, BEACH, and MAVERIC II.

"In the opinion of a surgeon"

20.7 Decision Memo

Patients at high risk for CEA are defined as having significant comorbidities and/or anatomic risk factors (i.e., recurrent stenosis and /or previous radical neck dissection), and would be poor candidates for CEA in the opinion of a surgeon.

So to be sure we considered all CMS NCD inclusion/exclusion criteria for 20.7 I created a CAS procedure scheduling checklist. This checklist has created a much greater awareness of criteria.

Carotid Artery Stent Procedure Scheduling Checklist

Patient's Name: _____ DOB: _____

IHC #: _____

CMS Coverage Criteria: Patients who are at high risk for CEA and who also have symptomatic carotid artery stenosis 70% or greater.

Ordering Physician: _____

Initial: _____ Date: _____
Duplex: _____ %
CTA : _____ %
Arteriogram/MRA: _____

High Surgical Risk Criteria: Please check all that apply:

_____ Age 80 years or greater
_____ Recent (<30 days) MI
_____ (LVEF) < 30%
_____ NYHA Class III or IV congestive heart failure
_____ Unstable angina: CCS Class III/IV, or abnormal stress test, or need for open-heart surgery
_____ Renal failure: end-stage disease on dialysis
_____ Severe chronic lung disease
_____ Tracheostomy
_____ Previous neck radiation
_____ Common Carotid Artery (CCA lesion)(s) below the clavicle
_____ High cervical Internal Carotid Artery (ICA) lesion(s)
_____ Contralateral carotid occlusion
_____ Contralateral laryngeal nerve palsy
_____ Restenosis of prior (CEA)
_____ Other _____

Symptoms of carotid artery stenosis include:

_____ Carotid transient ischemic attack (distinct focal neurological dysfunction persisting < 24 hours)

When a patient does not meet criteria for a CAS (20.7) but the surgeon still feels it is the best plan of care for the patient, we will have another PV surgeon review the case. If both agree, we will schedule and inform billing and administration that we can not bill CMS.

Symptoms of carotid artery stenosis include:

_____ Carotid transient ischemic attack (distinct focal neurological dysfunction persisting < 24 hours)

_____ Transient monocular blindness (amaurosis fugax)

_____ Indicate if Prior Stroke Symptoms.

Modified Rankin Score *If had a prior stroke - PV surgeon MUST assign Rankin Scale Score 0-5**

0 1 2 Focal cerebral ischemia producing a non-disabling stoke (modified Rankin Scale < 3 with symptoms for 24 hours or more)

3 4 5 **Note: patients who have had a disabling stroke (modified Rankin Scale 3 or greater) shall be excluded from coverage**

☐ Meets Criteria to schedule

☐ Does not meet criteria to schedule and needs further review

Additional review completed by: 1) _____ Date _____

2) _____ Date: _____

Circle One : OK To Schedule for CAS Do Not Schedule for CAS

Interventionalist:_____

_____% The degree of stenosis must be confirmed by angiography at the start of the procedure. If the stenosis is determined to be <70% by angiography, ***then the CAS should not proceed.***

_____ (Y / N) Embolic Protection Device used.

All Risks and Symptoms must be documented in the Medical Record. This Checklist does not serve as a Medical Record.

Finally, to complete the checklist, the interventionalist must indicate that the degree of stenosis is greater than 70% by angiography or the CAS should not proceed.

In addition, a embolic protection device must be successfully deployed to be able to bill for the procedure if they did meet initial 20.7 criteria.

Interventionalist:_____

_____ % The degree of stenosis must be confirmed by angiography at the start of the procedure. If the stenosis is determined to be <70% by angiography, ***then the CAS should not proceed***

_____ (Y / N) Embolic Protection Device used.

For July 2015 thru Dec 2015 we were not able to bill for 3 cases because they did not meet all necessary criteria.

For all of 2015 it was seven patients that we unable to bill for.

I use the VQI to export the patient list in the date range I want to create this file. We track each Physician, LOS and outcomes.

July 1 2015 thru Dec 31 2015 IHC CAS Cases

Last Name	First Name	MRN	Insur	Sympt.	Admit Date	Surgery Date	Discharge Date	Physician	Post Op LOS	Outcome / Complications
		208027	PPO	No	8/31/2015	8/31/2015	9/1/2015	Atul Chawla (1)	1.00	Severe COPD - Home
		633648	CMS	No	7/14/2015	7/14/2015	7/15/2015	David W McAllister	1.00	*Home
		682338	CMS	Yes	6/30/2015	7/2/2015	7/6/2015	David W McAllister	4.00	Urgent - Home
		601925	PPO	No	8/14/2015	8/20/2015	8/21/2015	David W McAllister	1.00	Urgent - Home
		222479	CMS	Yes	11/6/2015	11/6/2015	11/7/2015	David W McAllister	1.00	Home
		472976	PPO	No	10/6/2015	10/6/2015	10/12/2015	David W McAllister (5)	6.00	CAS prior to CABG - Home
		678661	CMS	No	7/20/2015	7/20/2015	7/21/2015	Magdi Ghali	1.00	*Home
		338974	CMS	Yes	7/24/2015	7/24/2015	7/25/2015	Magdi Ghali	1.00	Urgent - Home
Petersen	Diane	147163	CMS	No	8/11/2015	8/11/2015	8/12/2015	Magdi Ghali (3)	1.00	*Home

*Please note: 3 cases were not billable under CMS 20.7

Average LOS - ALL	1.89
Average LOS - Elective	1.83
Median	1.00

It's hard to argue with our CAS results when patients are high risk for CEA. 2013 thru 2015 with no stroke/deaths.

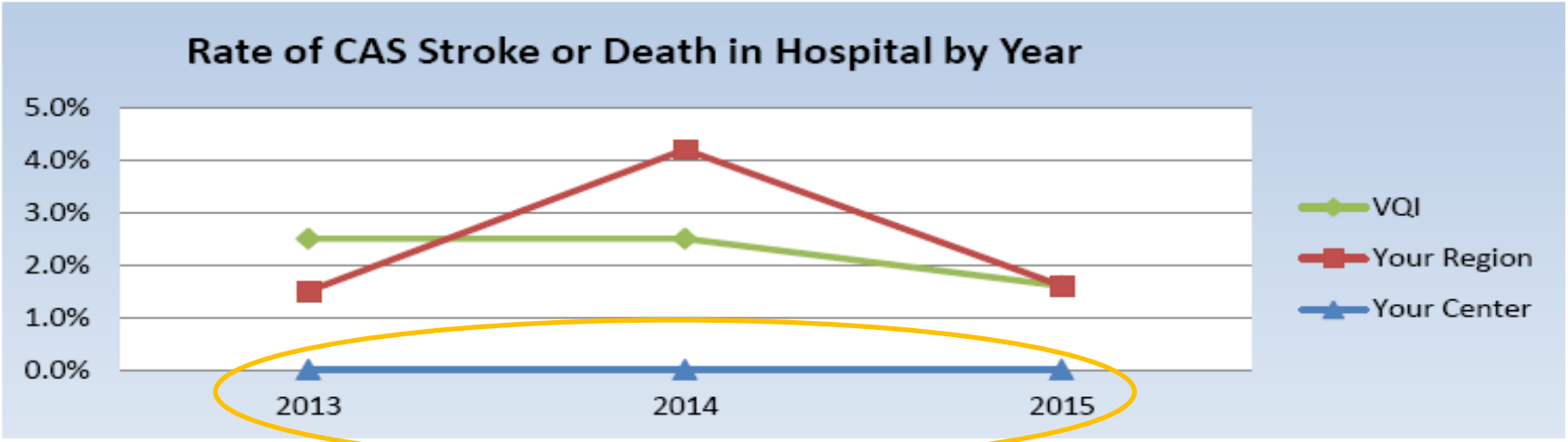
(Approx. 20-25 CAS cases per year)

Carotid Artery Stent: Stroke or Death in Hospital

Elective procedures, 2015, excluding prior ipsilateral CEA

	Your center	Your region	VQI
Total procedures	7	125	1483
Overall observed rate	0.0%	1.6%	1.6%
# cases with complete data*	7	122	1416
Observed rate in cases with complete data	0.0%	1.6%	1.7%
Expected rate*	1.1%	1.6%	*p<.05 = observed significantly different from expected
p-value (O vs. E)	1.00	1.00	

*"Expected rate" is the rate estimated by a statistical model that accounts for patient characteristics, including age, gender, race, BMI, comorbidities, medications and stroke and vascular history. "Cases with complete data" include patients who have data on all of those factors.



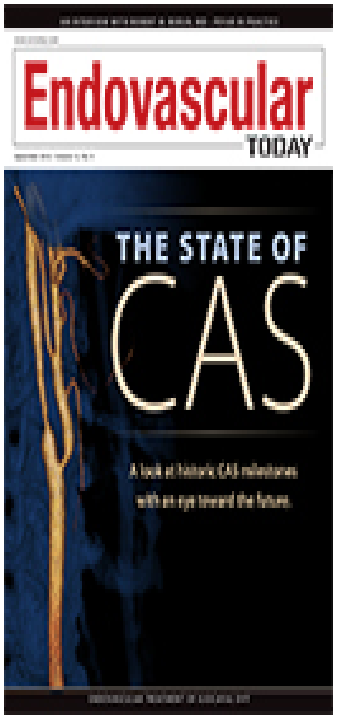
Is CREST-2 our answer?

September 2013

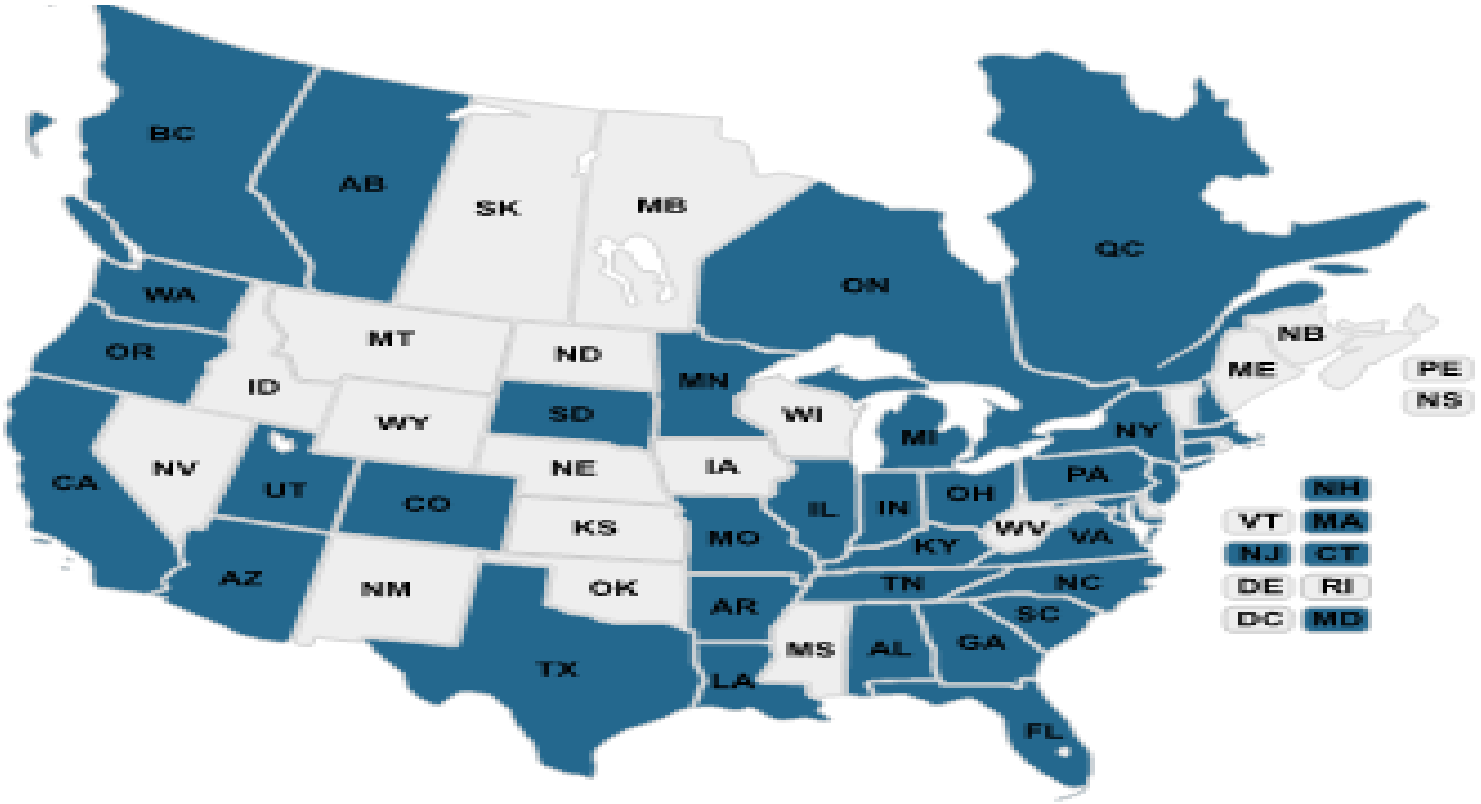
CREST-2: Guiding Treatments for Asymptomatic Carotid Disease

Examining stenting and endarterectomy in the context of intensive medical management.

By Brajesh K. Lal, MD; James F. Meschia, MD; and Thomas G. Brott, MD



Is anyone in our regional group part of the study?



88 CREST-2 Centers

Actively Enrolling of up to 120 Centers

Study centers/by state/ in blue per CREST-2 website.

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Regional Reports:
Joe Schneider, MD

Note: In all reports, regional data are not shown for regions with <3 centers participating in the applicable registry.

In "by Center" bar charts, unless noted, data are not shown for centers with <10 cases.

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LTFU Reports

	Your region	VQI
	Follow-up rate (N)	Follow-up rate (N)
CAS	74% (110)	63% (1989)
CEA	75% (589)	67% (11121)
EVAR	85% (236)	68% (4456)
HEMO	60% (184)	71% (4364)
INFRA	84% (175)	71% (4701)
OAAA	79% (70)	71% (1125)
PVI	75% (672)	61% (14501)
SUPRA	76% (76)	66% (1722)
TEVAR	68% (28)	62% (850)
IVCF*		80% (360)
2013 overall	75% (2150)	66% (45189)
2012 overall	67% (811)	72% (31941)

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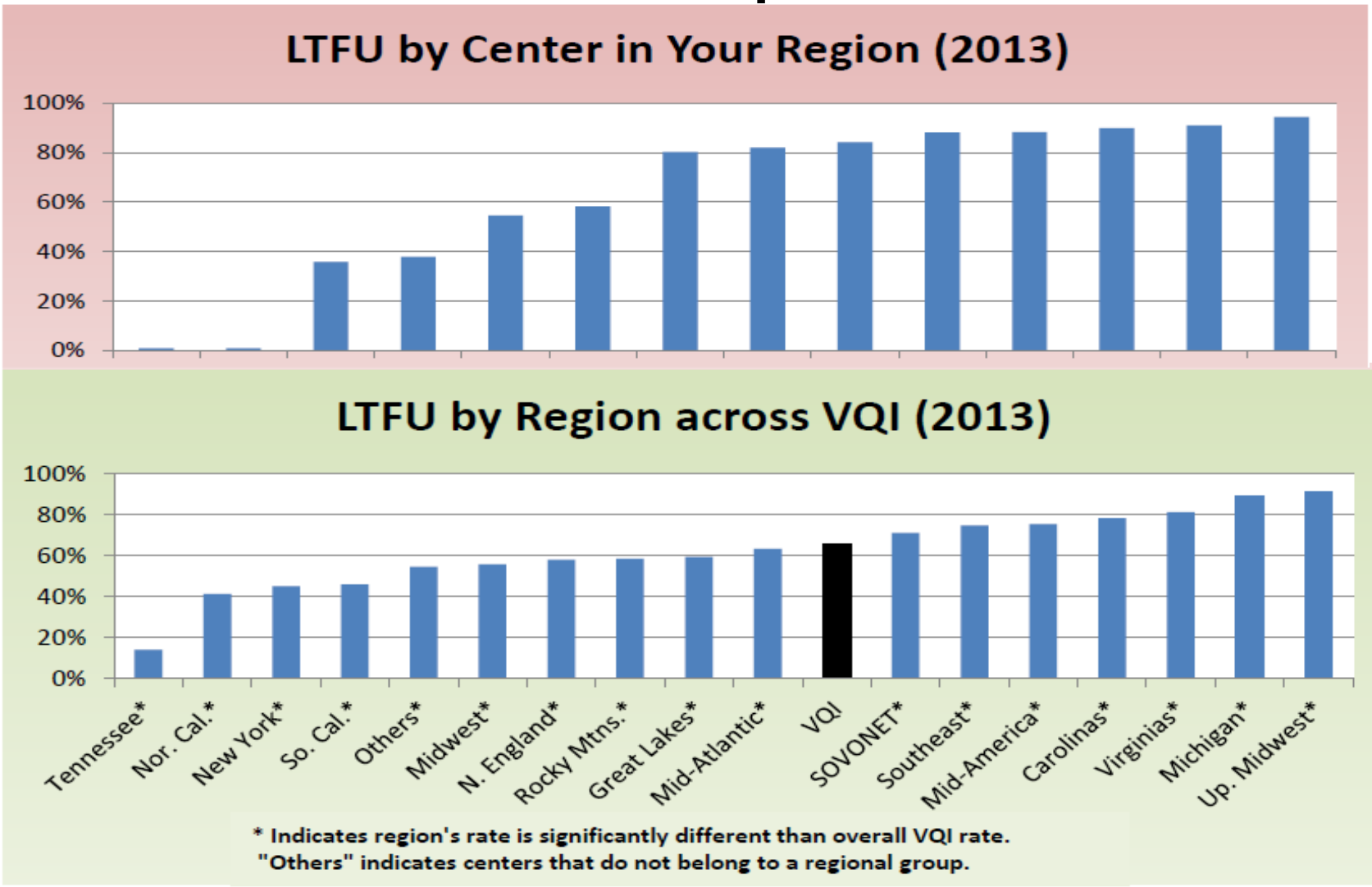
LTFU Reports



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Transparency with LTFU?

- Due to the start participation award
- Supported by the Executive Committee of the Governing Council
- Does not violate any PSO regulations
- Vote

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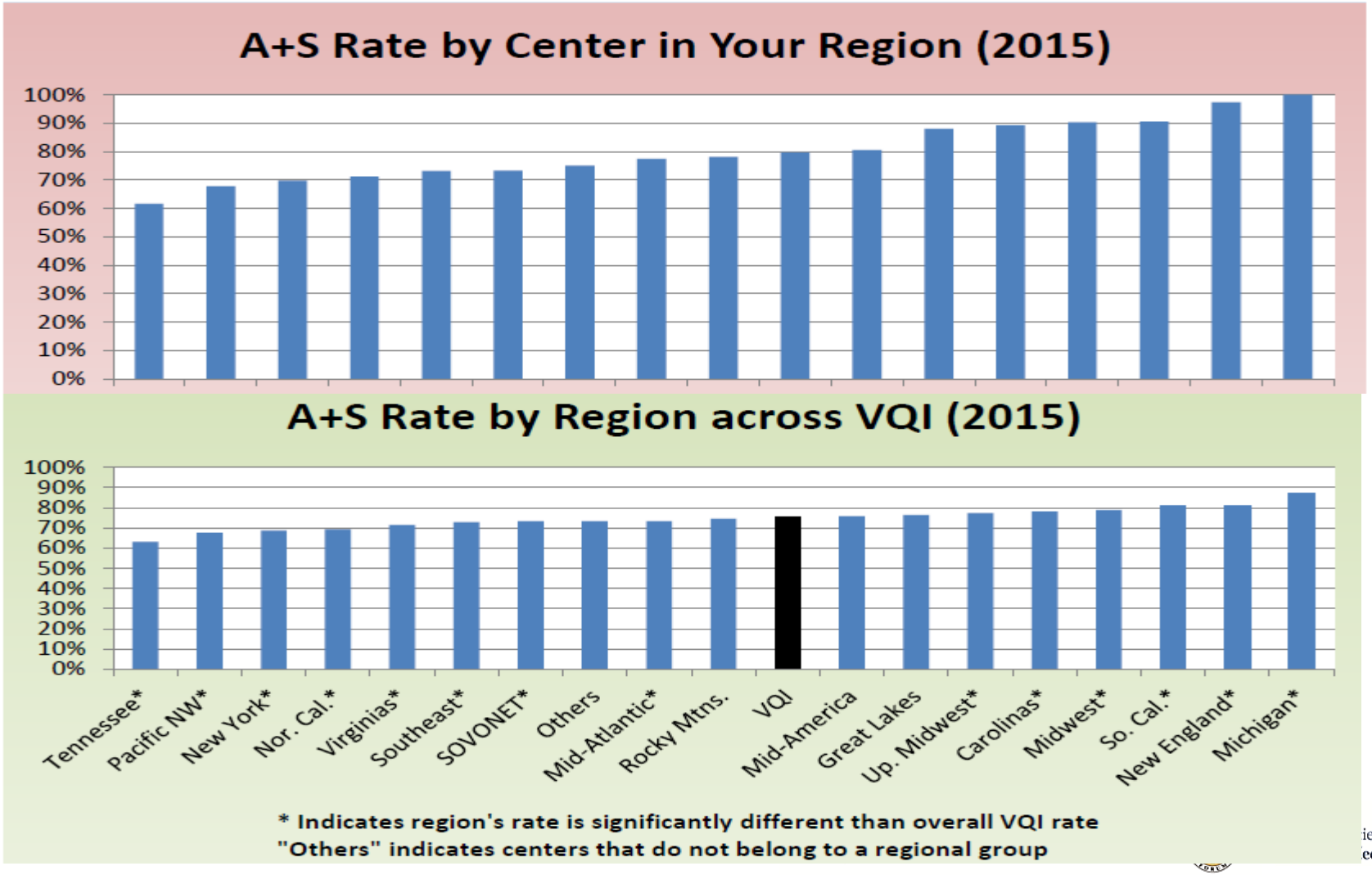
Discharge Medications Antiplatelet and Statin (2015)

Excludes missing, not treated for medical reason and non-compliant



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Randy DeMartino, MD (poster)

Want to Improve 5-Year Survival? Check the Meds…

Antiplatelet (AP) and statin medications are an important component to treatment, but a third of eligible post-op VQI patients leave the hospital without these medications. **Those patients on AP and statins had a 14% absolute survival benefit and 40% adjusted improved survival.**

Survival by Discharge Medications

- For every 25 patients treated, discharge on an antiplatelet agent and statin medication is associated with 3.5 additional patients alive at 5 years!

- VQI participation is highly associated with improvement in medication use

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edicine

Randy DeMartino, MD (poster)

Conclusion:

Medical management is associated with improved survival after a number of vascular procedures. Importantly, VQI participation improves the use of medical management, demonstrating that involvement in an organized quality effort can affect patient outcomes.

Source: DeMartino RR, Hoel AW, Beck AW, Eldrup-Jorgensen J, Hallett JW, Upchurch GR, Cronenwett JL, Goodney PP; Vascular Quality Initiative. J Vasc Surg. 2015 Jan 15. pii: S0741-5214(14)02200-9. doi: 10.1016/j.jvs.2014.11.073

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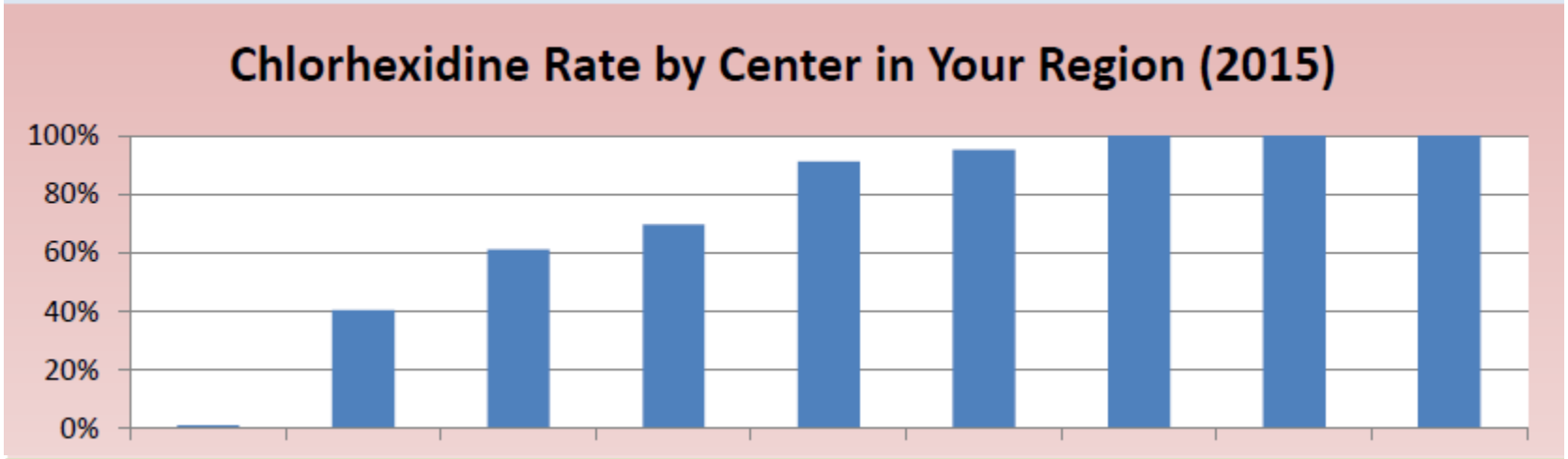
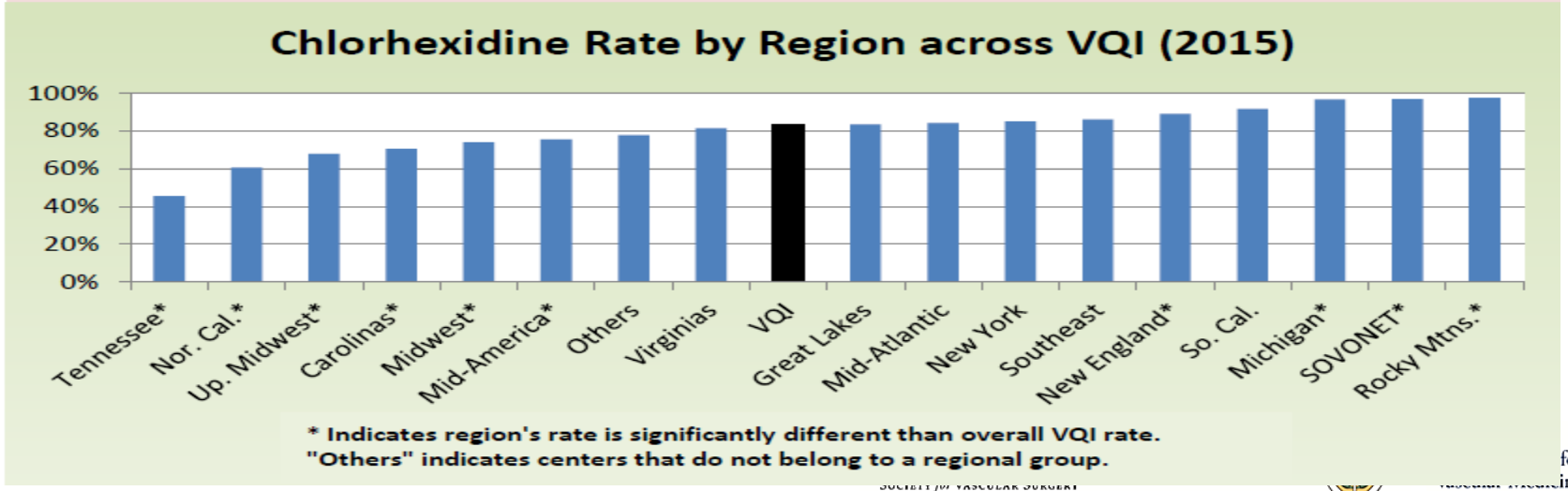
Percentage of Infra inguinal Bypass Procedures with Chlorhexidine or Chlorhexidine + Alcohol Skin Prep (2015)





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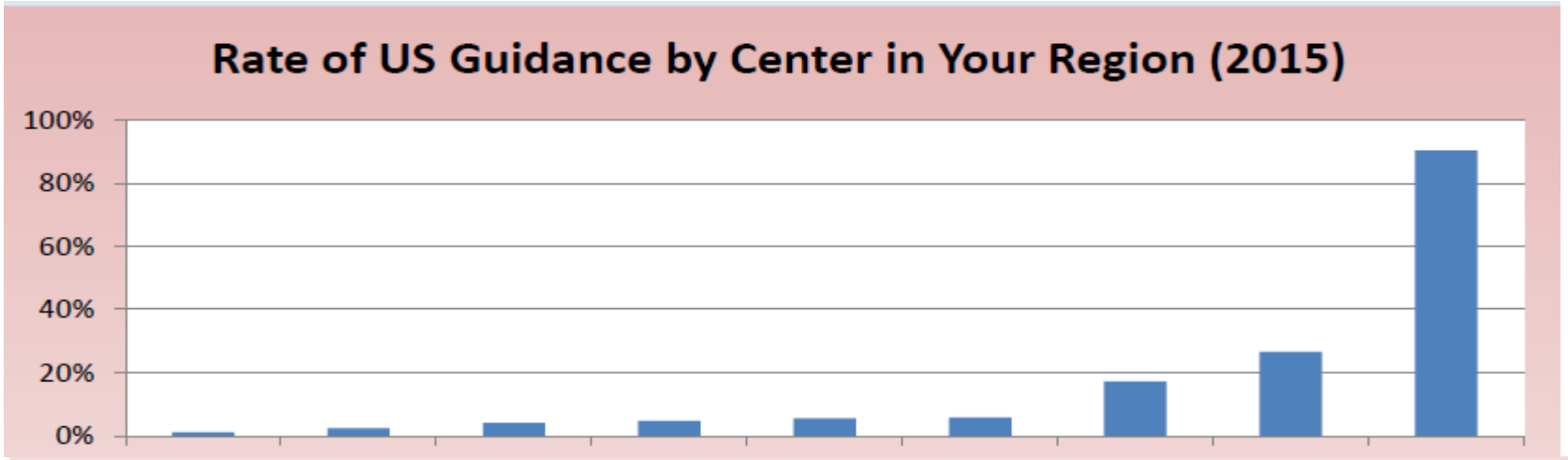
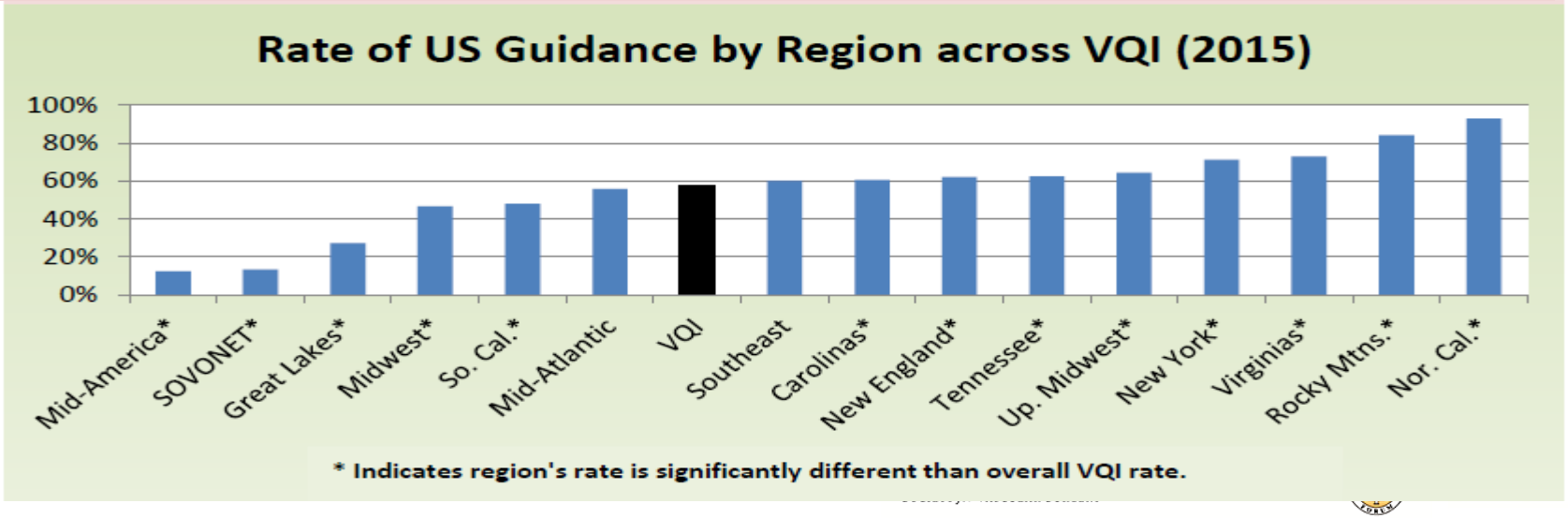
Percentage of Percutaneous Femoral PVI Procedures Using Ultrasound Guidance (2015)Excludes cut –down





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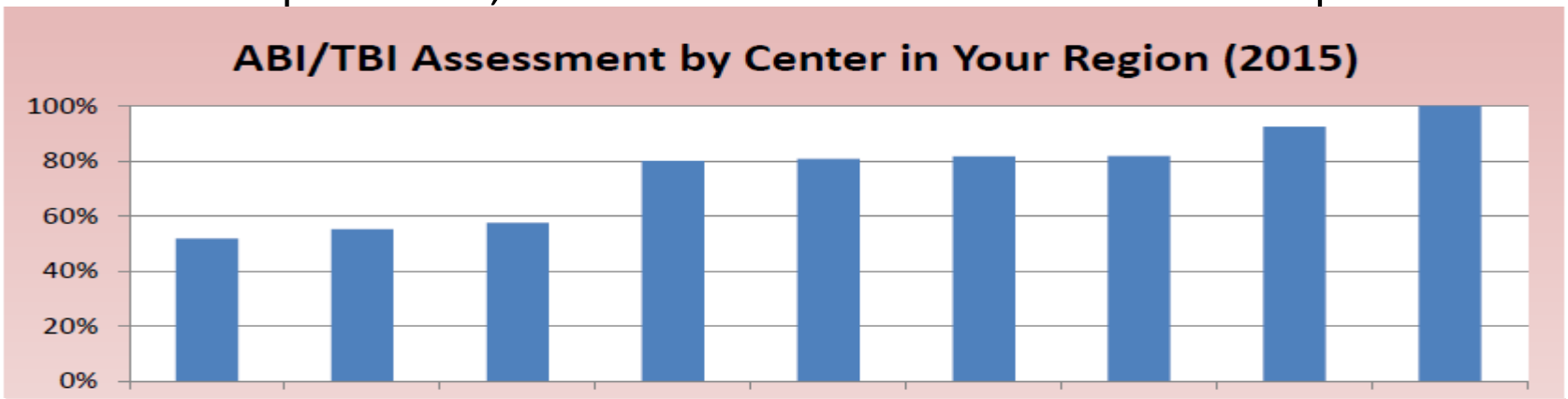
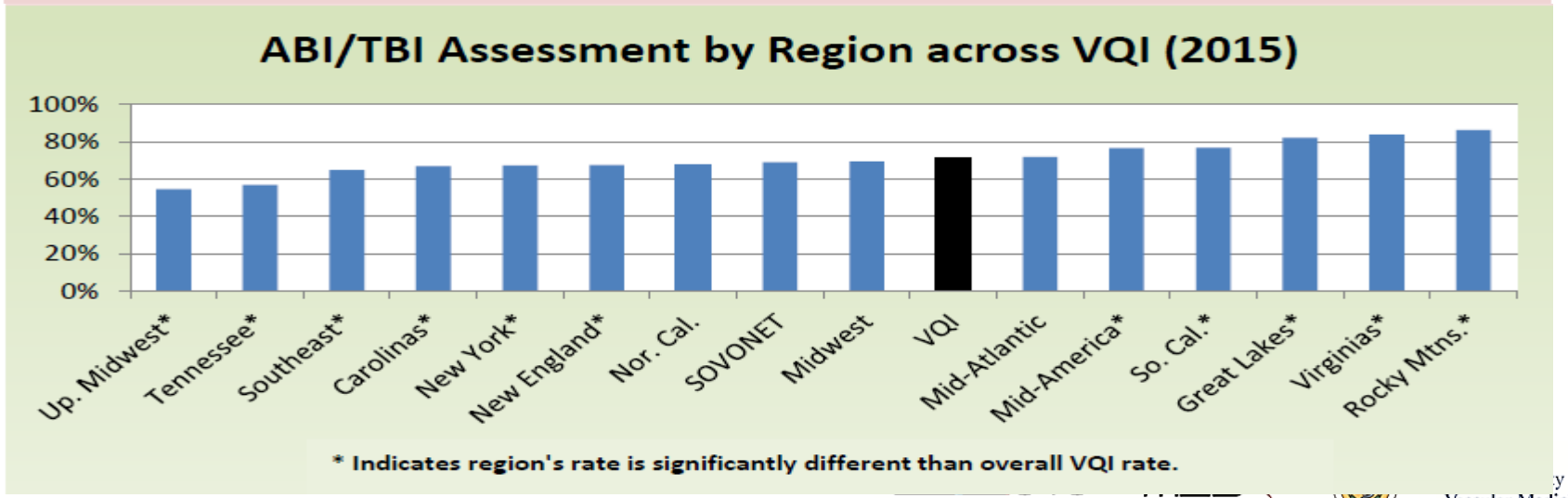
PVI: Percent of Patients with ABI or TBI Assessed Before Procedure (2015)

"ABI or TBI Assessed" indicates at least one measure was recorded for the side of the procedure, or on both sides for bilateral and aortic procedures

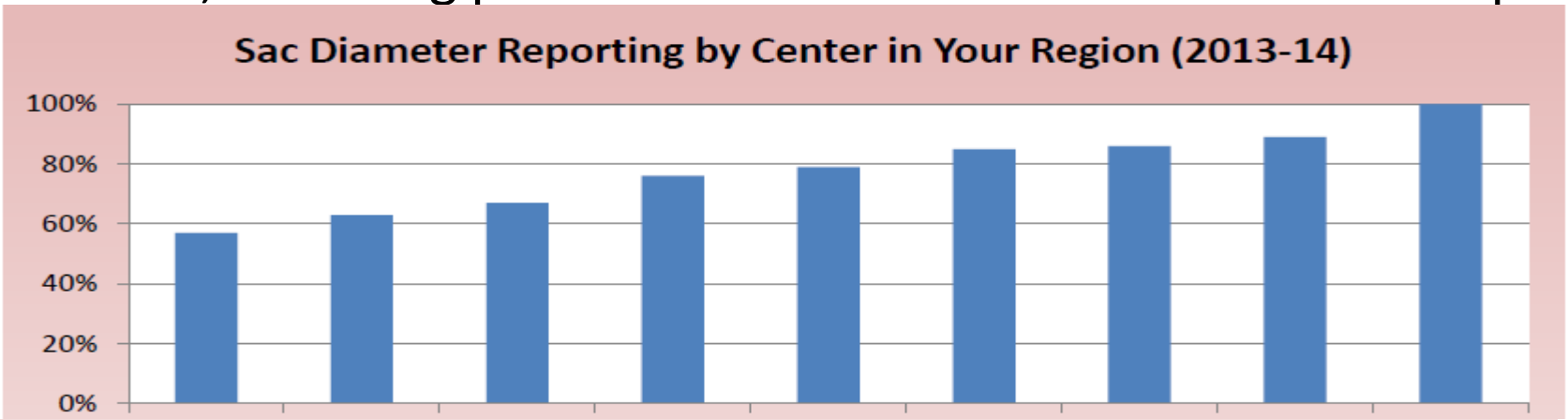


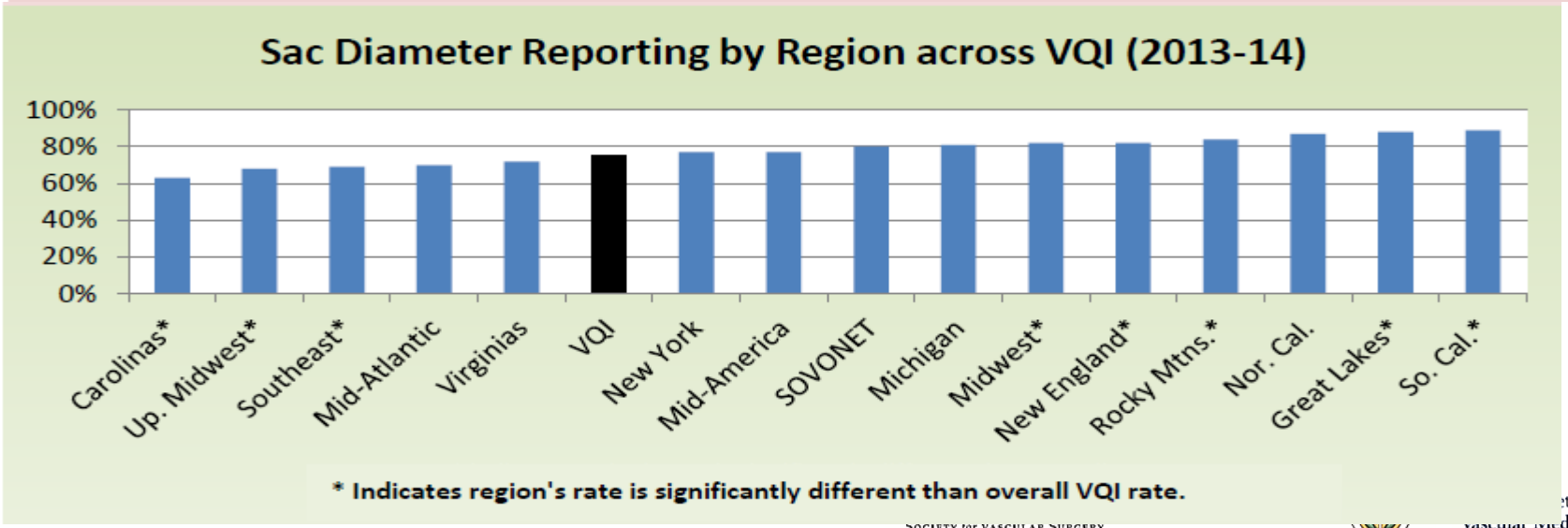


Vascular Quality Initiative®

EVAR: Rate of Sac Diameter Reporting at Long-Term Follow Up

2013, excluding patients without at least 9 month follow up





Best Practice

- Iowa Heart Center

Iowa Heart Center Vascular & Surgery Follow Up Schedule

Mary Jo Ramey, RN, BSN, CNOR
Director of Vascular Services
Iowa Heart Center

Dr Schneider noticed when reviewing the regional report that one center had achieved 100% CTA sac diameter measurements at their follow up visits captured in the registry.

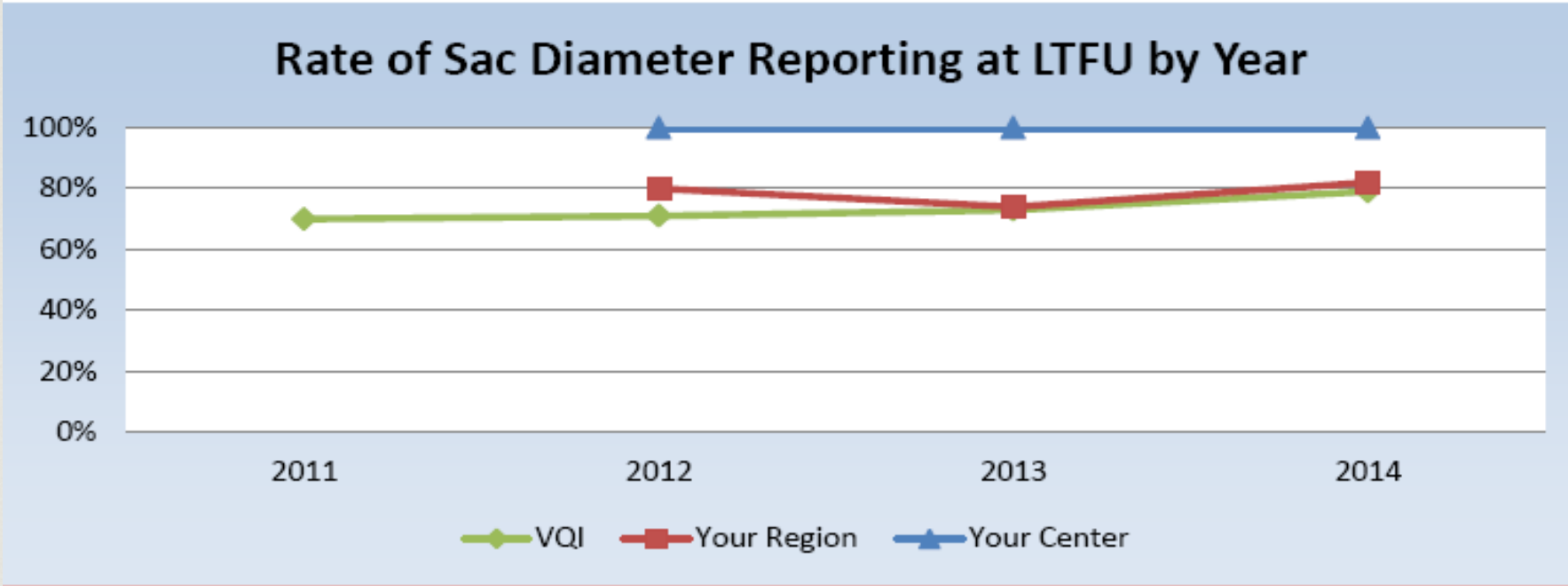
He asked Carrie to determine what center this is and asked that center to de-identify to discuss their process. For this report it happens to be IHC Vascular and we will be happy to share the follow up schedule we follow.

Spring 2016 Report

EVAR: Rate of Sac Diameter Reporting at Long-Term Follow-Up

2013, excluding patients without at least 9 months of follow-up

Your center		Your region		VQI	
% With Diameter Measured	N With LTFU	% With Diameter Measured	N With LTFU	% With Diameter Measured	N With LTFU
100%	34	74%	200	73%	3021



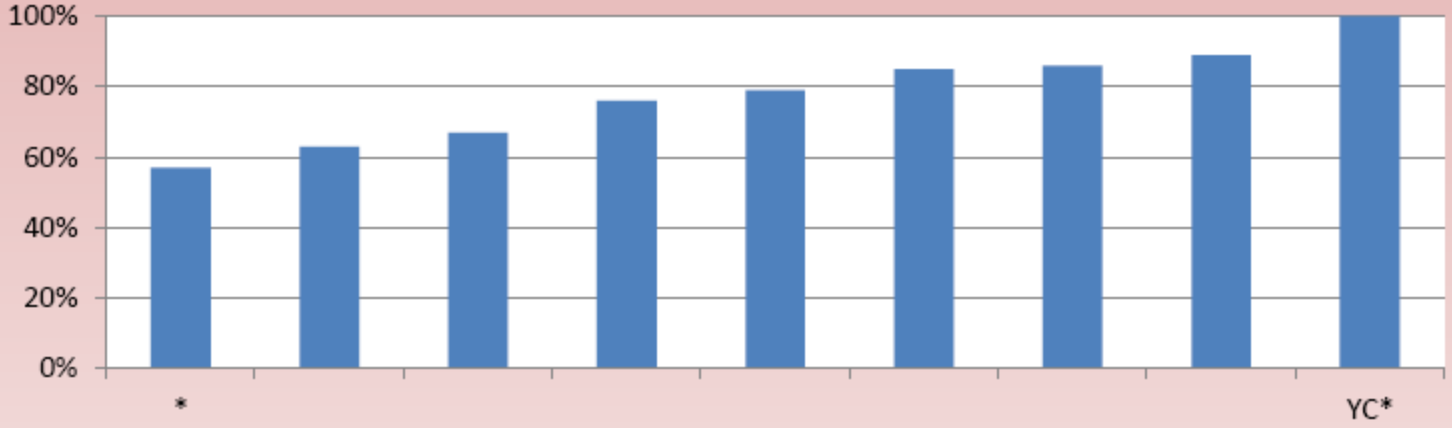
The PV Follow Up Office Process

- Patients are asked to come to the office approximately 7 days post op.
- Patients are then scheduled for 1 month from their first post op visit.
- This visit is now frequently 6 weeks or more from surgery.
- The 6 month visit is now usually after 9 months due to physician/patient schedules and all the other visits; 7 days plus, 1 month plus, 6 months plus.

Testing is always done before the office visit.

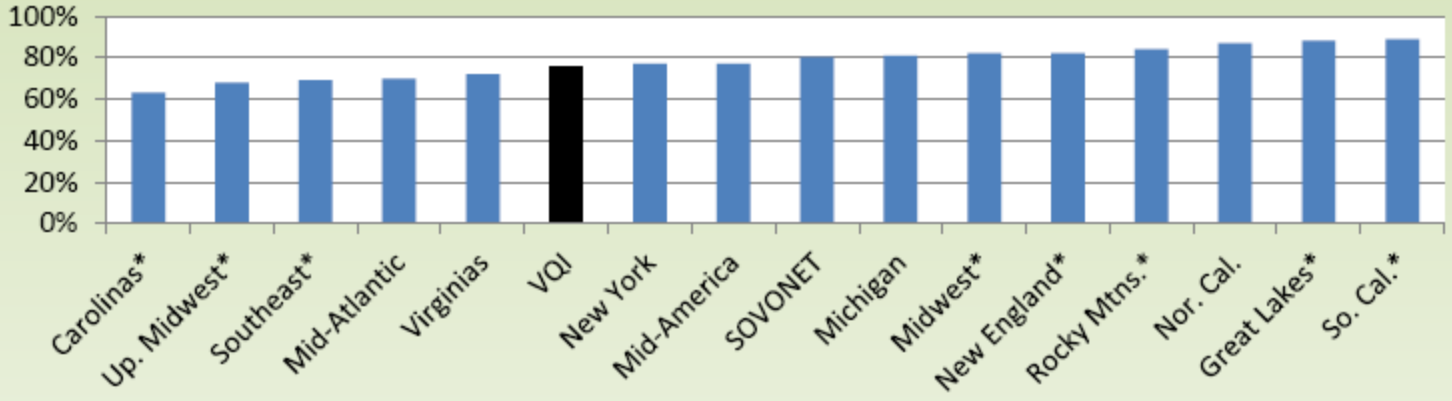
- When a office visit is scheduled with the providers, all recommended testing is scheduled before or the same day as the re-check visit so that information is available during the re-check visit.
- If the ordered testing is not completed - the office visit is canceled and re-scheduled with the testing to be available for the visit.

Sac Diameter Reporting by Center in Your Region (2013-14)



YC=Your Center; * = Center rate is significantly different than overall regional rate.

Sac Diameter Reporting by Region across VQI (2013-14)



* Indicates region's rate is significantly different than overall VQI rate.

Vascular Surgery Follow-up Schedule

Carotid Endarterectomy *
10 days: Surgical site recheck w/NPP
1 month: Surg. side Car US, recheck
6 months: Bilat Car US, recheck
12 months: Bilat Car US, recheck
then
Annually: Bilat Car US, recheck

Carotid Stent *
1 month: recheck w/MLP
2 month: stent side Car US, recheck
6 month: Bilat Car US, recheck
12 month: Bilat Car US, recheck
then
Annually: Bilat Car US, recheck

Lower Extremity Bypass (in situ and PTFE) *
10 days: ABIs, recheck w/NPP
1 month: Graft US, ABIs, recheck
Q3mo (1st yr): Graft US, ABIs, recheck
Q6mo (2nd yr): Graft US, ABIs, recheck
Annual: Graft US, ABIs, recheck

Renal Stents*
1 week: groin check w/NPP
1 month: GFR recheck w/NPP
6 month: GFR, recheck
then
Every 6 months: GFR, recheck

Open AAA Repair *
14 days: ABIs, recheck w/NPP
1 month: recheck
6 month: Abd. Graft US, recheck
Annual-then every other: Abd Graft US, recheck

Aorto Bifem Repair *
10 days: ABIs, recheck w/NPP
1 month: recheck
6 month: Abd Graft US, recheck
Annually: Abd Graft US, recheck

Lower Extremity Stent Infra-inguinal *
1 week: groin check w/NPP
1 month: Stent US, ABIs, recheck w/NPP
6 month: Stent US, ABIs, recheck
12 month: Stent US, ABIs, recheck
then
Annually: Stent US, ABIs, recheck

Iliac Stent *
1 week groin check/w NPP
1 month Segs, recheck
6 month Segs, recheck

Surveillance AAA-US
3.5-4.4cm 12 mos
4.5-5.4 6 mos
3.0-3.4cm 3 yrs-otherwise healthy patients
2.6-2.9cm 5 yrs- otherwise healthy patients
Ref-JVS 10-09 vol 50

Endovascular AAA Stent Graft *
1 week: groin check w/NPP, ABIs, recheck
1 month: Abd graft US, CTA, recheck
6 month: Abd graft US, CTA, recheck
Annual: Abd. Graft US, recheck

MISC: *
Above/Below Knee Amputation
1 month: recheck w NPP
DVT:
1 month: Ven US, recheck in Vein Center
3 month: Ven US, recheck in Vein Center
CT guided injection of endoleak
1 month: CTA, recheck
AV Fistula Creation
2 wks: recheck w/ NPP
6 wk post op w/surgeon then
Every 3 months: recheck w/NPP
Pseudoaneurysm injection
2wks: Groin US, results to Cardiology

Revised 09-2014 mjr

* More frequent studies and rechecks in relation to disease.

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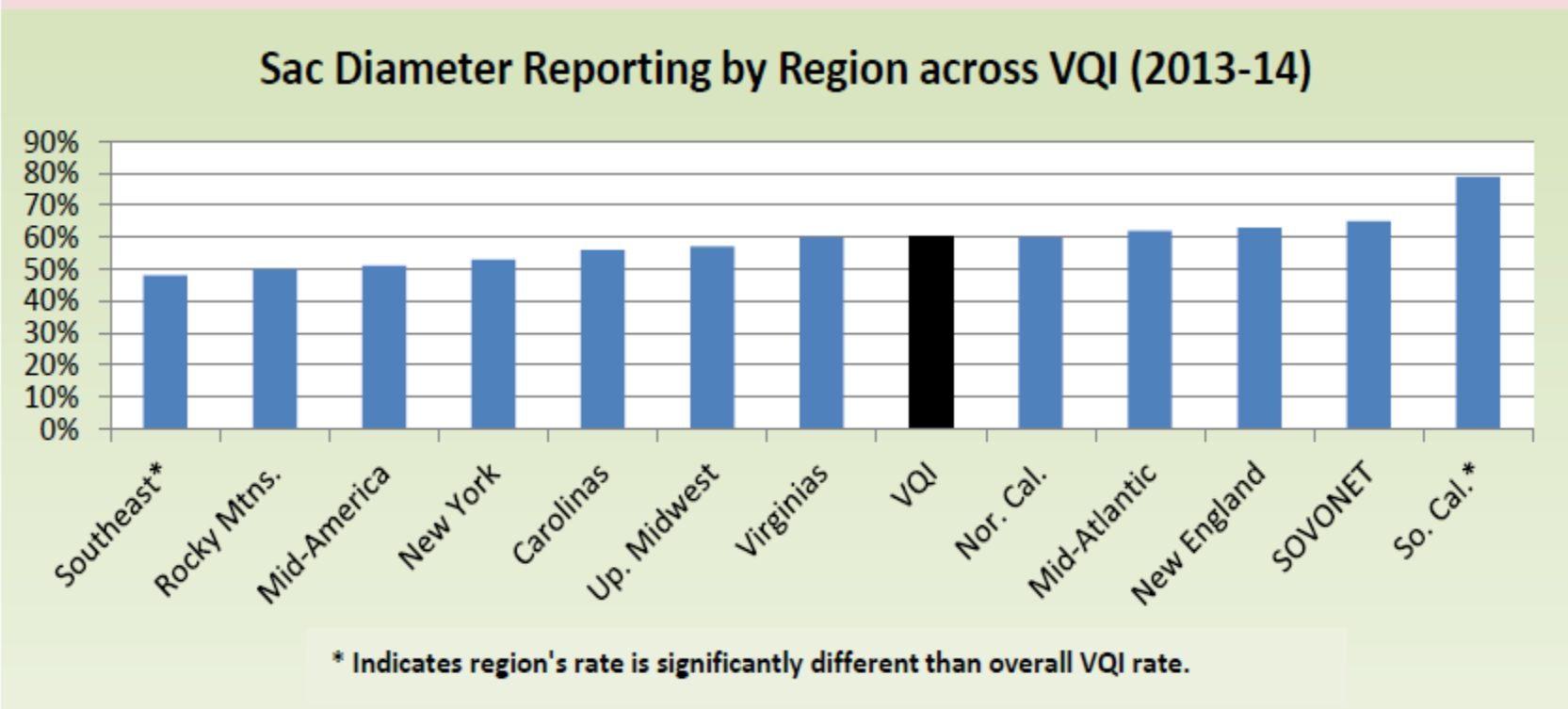
TEVAR: Rate of Sac Diameter Reporting at Long-Term Follow Up

2013, excluding patients without at least 9 month follow up



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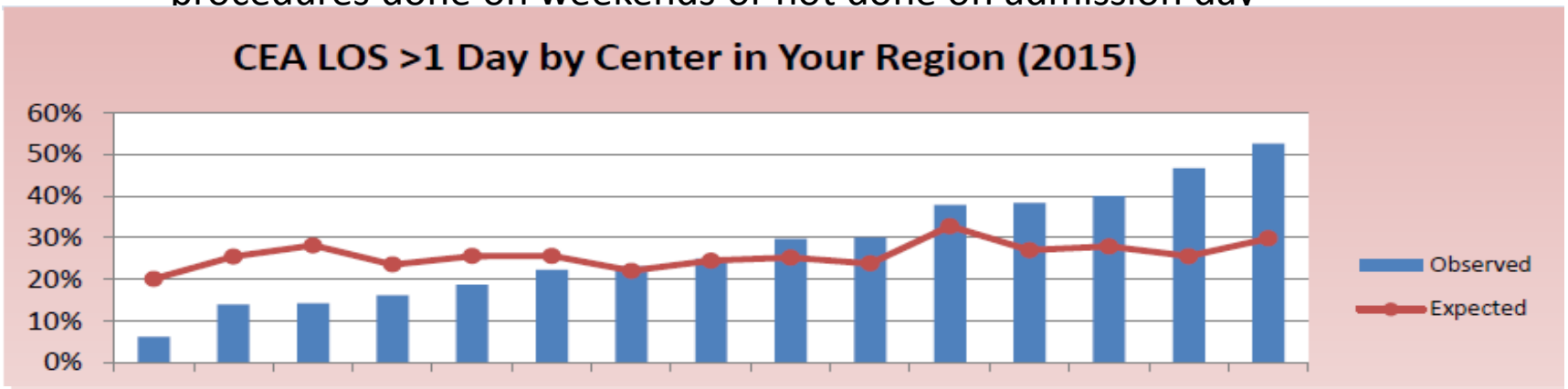
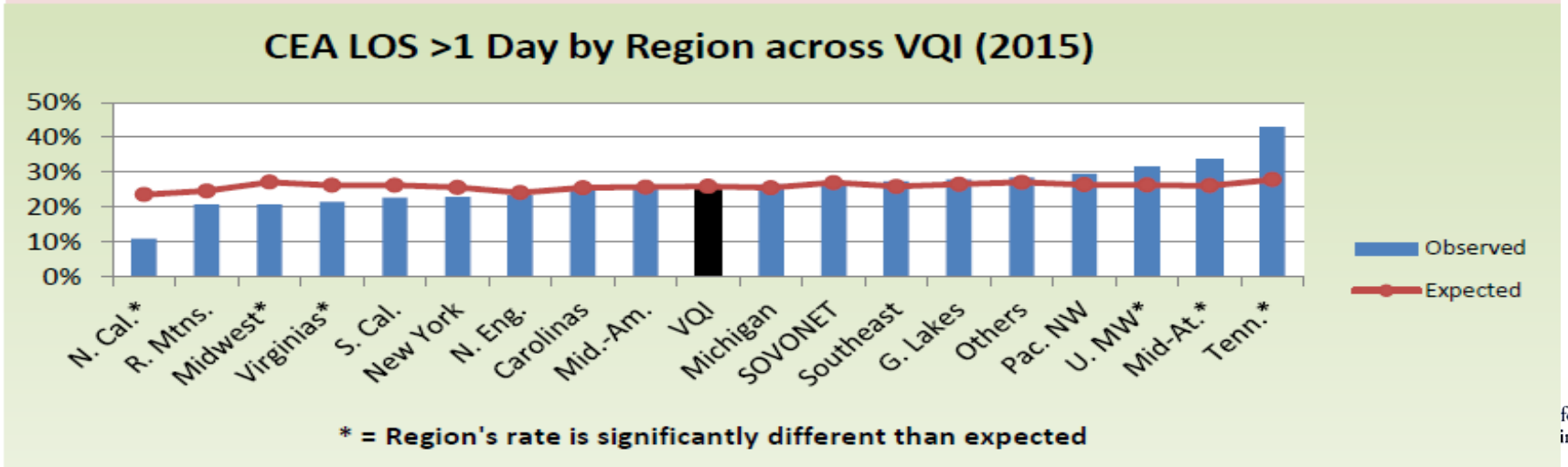
Carotid Endarterectomy

Percentage of Patients with Length of Stay > 1 Day

2015, elective procedures, excluding prior ipsilateral CEA, concomitant CABG, proximal endovascular or other arterial operation, in hospital death with LOS<= 1 day, procedures done on weekends or not done on admission day





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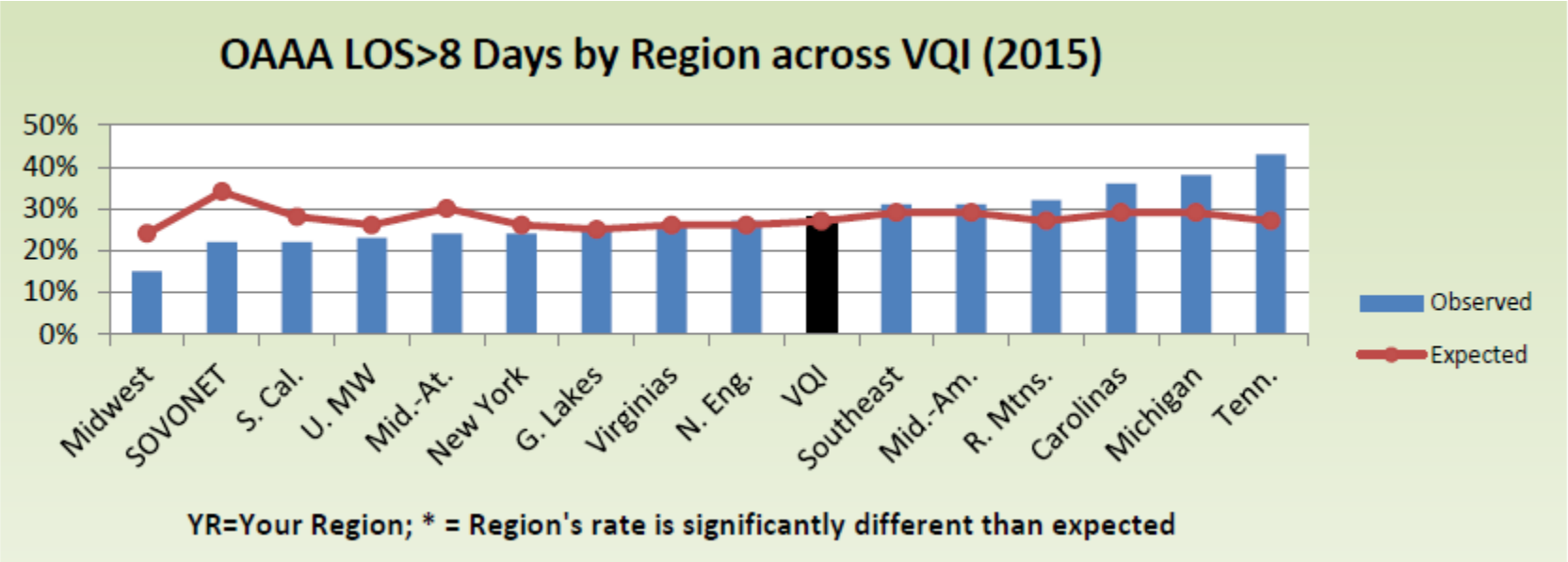
Open AAA Repair:
Percentage of Patients with Length of Stay >= 8 Days

2015 procedures, excluding ruptured aneurysms and in hospital deaths with LOS<=8 days, procedures not done on day of admission and weekend procedures



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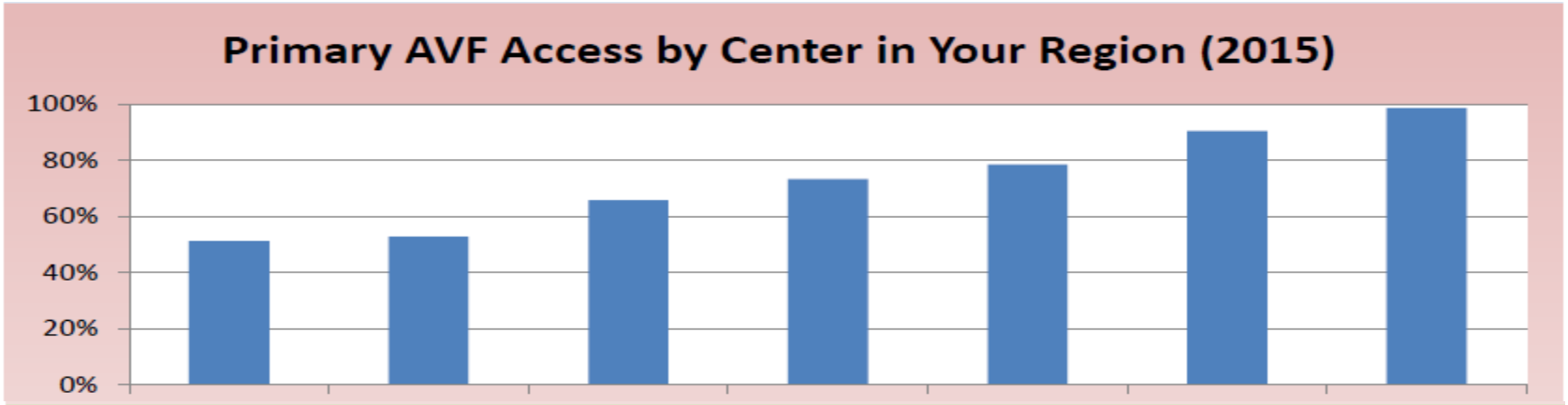
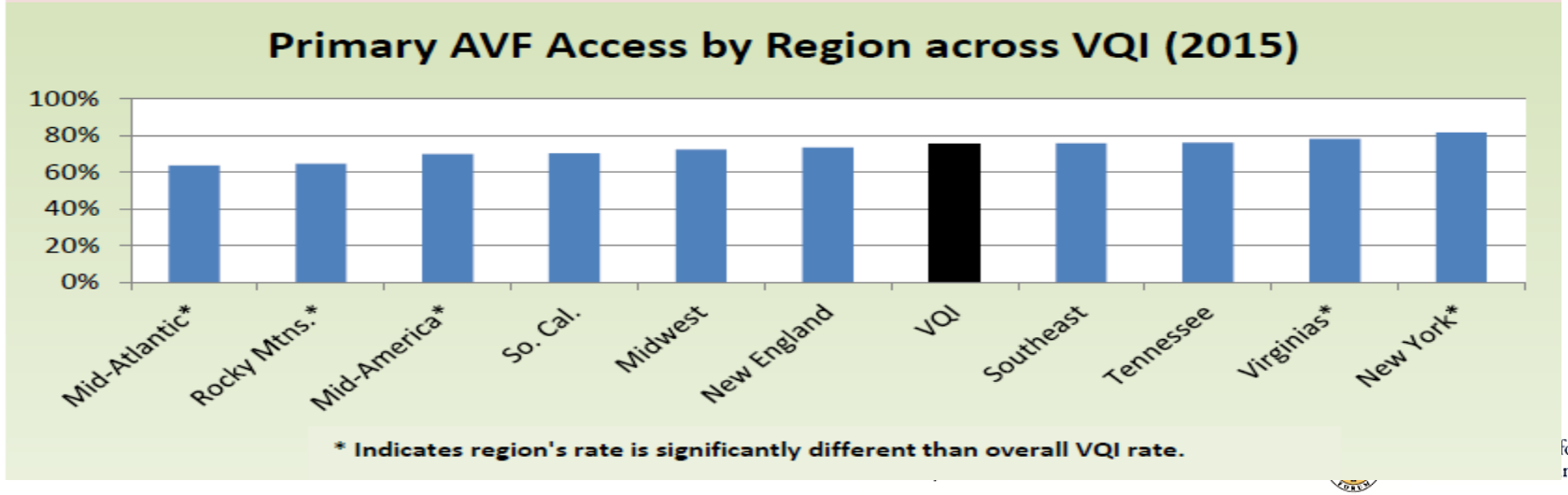
Hemodialysis Access: Percentage of Primary AVF vs. Graft

2015 procedures, excludes patients receiving AVF access who have received previous access in the forearm, upper arm or basilic vein on the same side

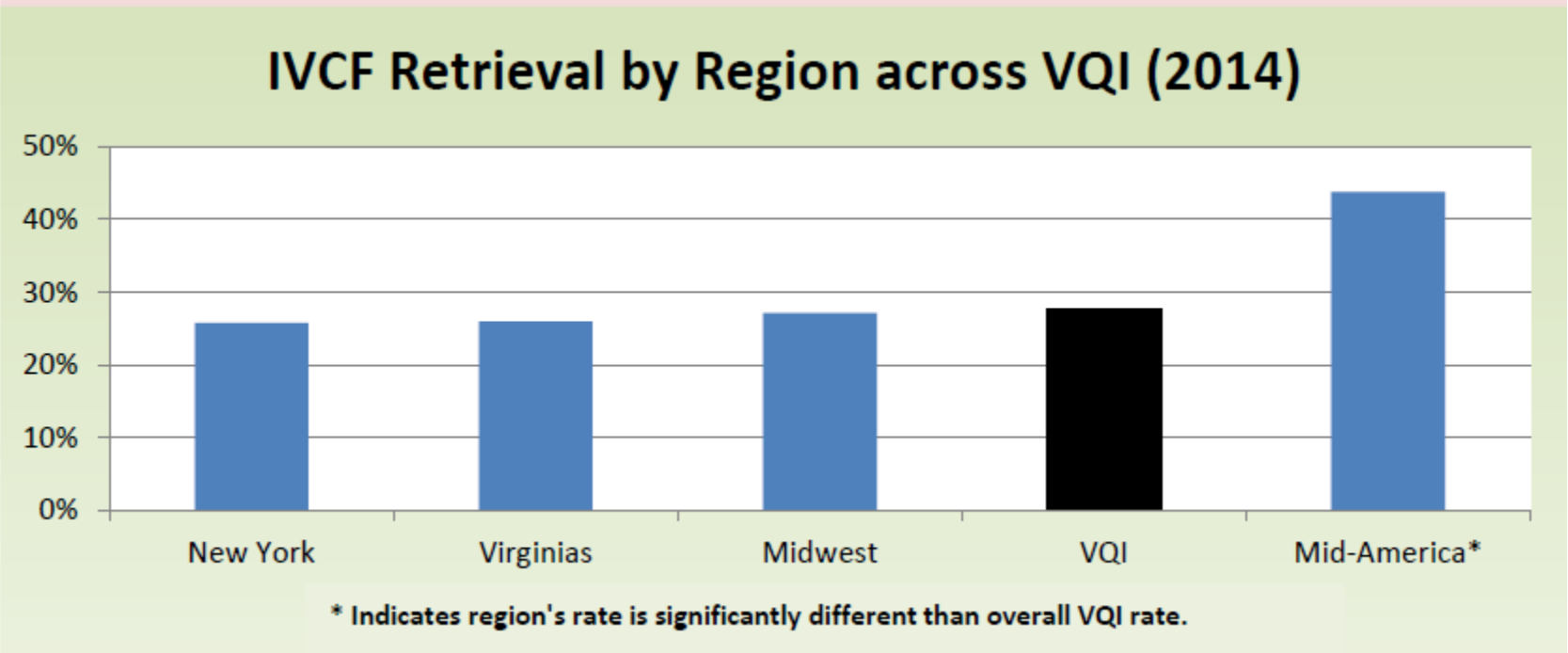




Vascular Quality Initiative®

IVC Filter: Percentage of Temporary Filters with Retrieval or Attempt at Retrieval

2015 procedures, excluding patients who have died since discharge



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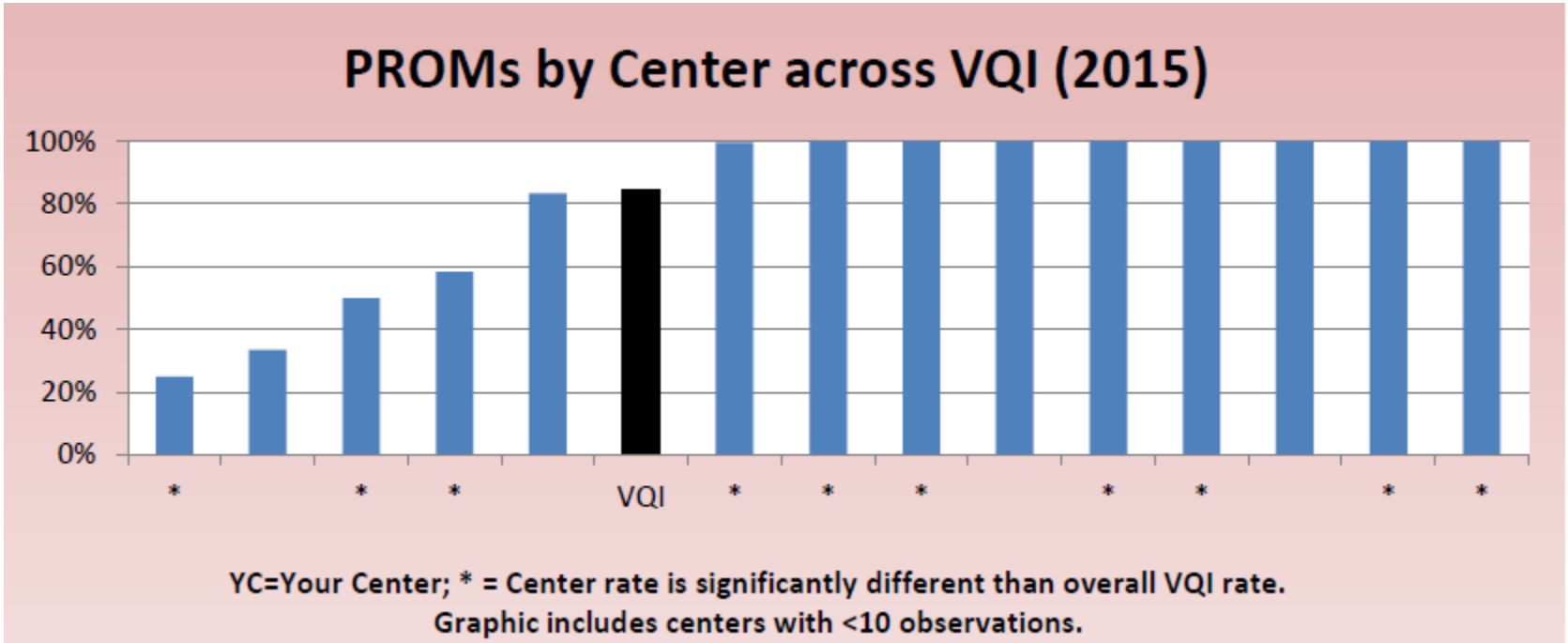
Vascular Quality Initiative®

Varicose Veins: Percentage of Procedures with Complete Patient-Reported Outcome Measures Recorded at Follow Up

2015 procedures; includes only patients with any follow-up visit recorded. All regional data omitted because most regions have <3 centers. Patient-reported outcome measures (PROMs) include heaviness, achiness, swelling, throbbing, itching, appearance and impact on work in side of operation.



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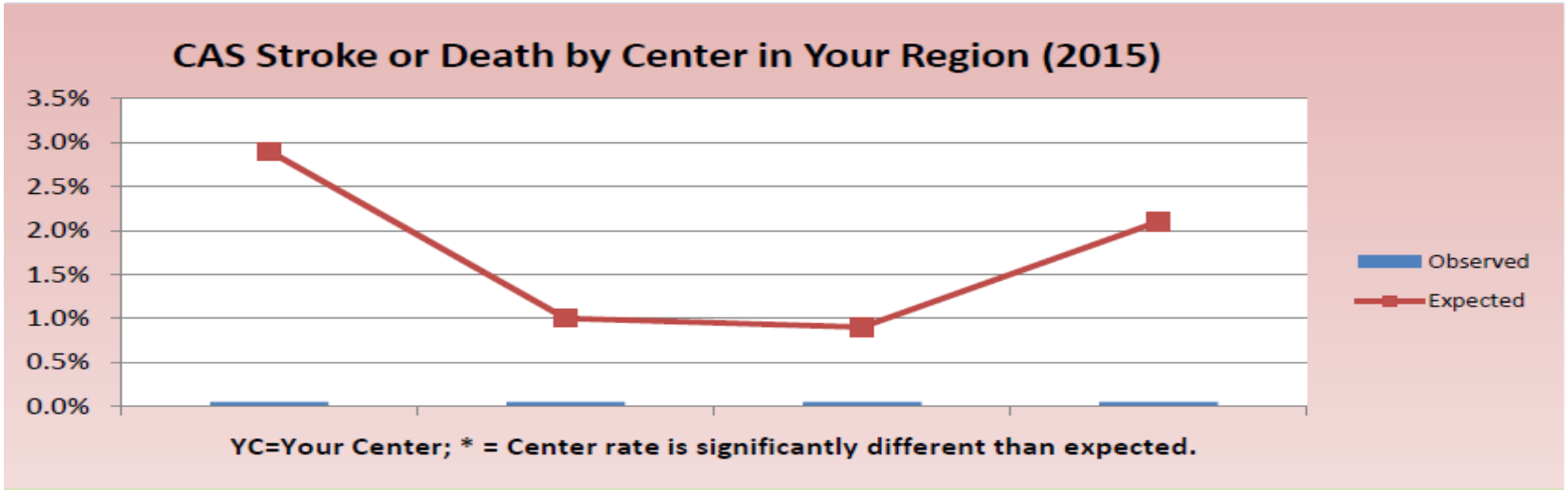
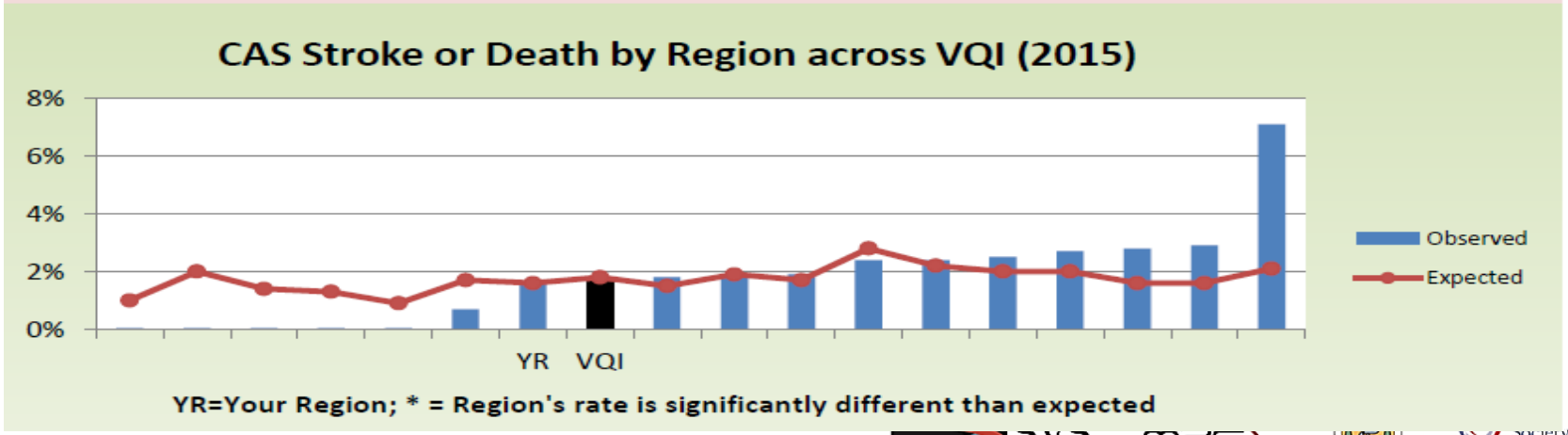
Carotid Artery Stent: Stroke or Death in Hospital

2015 procedures, elective, excluding prior ipsilateral CAS

(error with center level O/E new report will be issued)





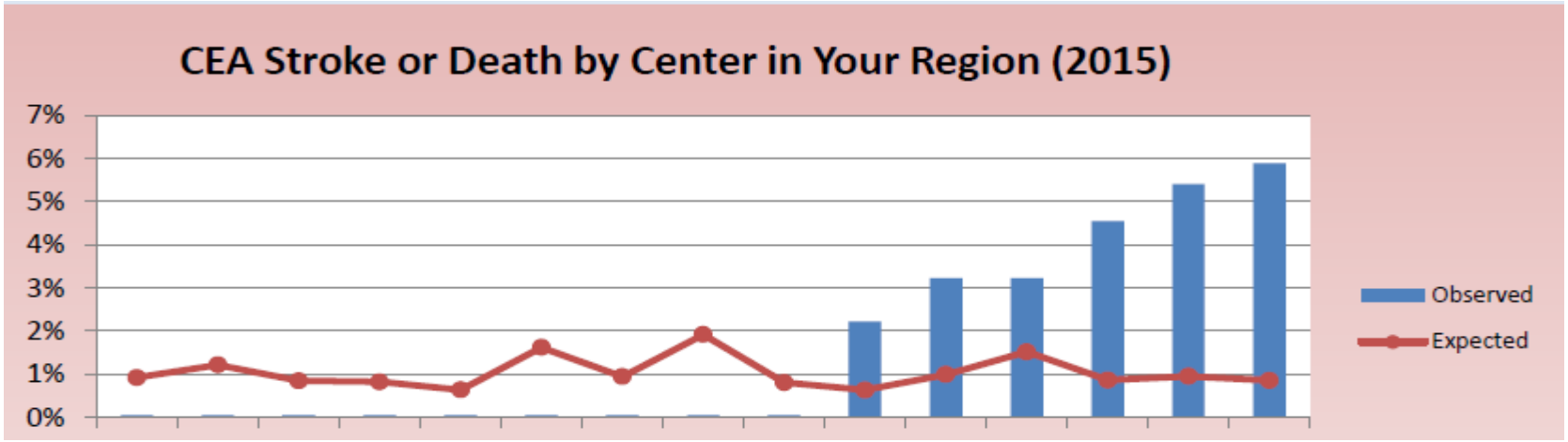
Society for Vascular Surgery

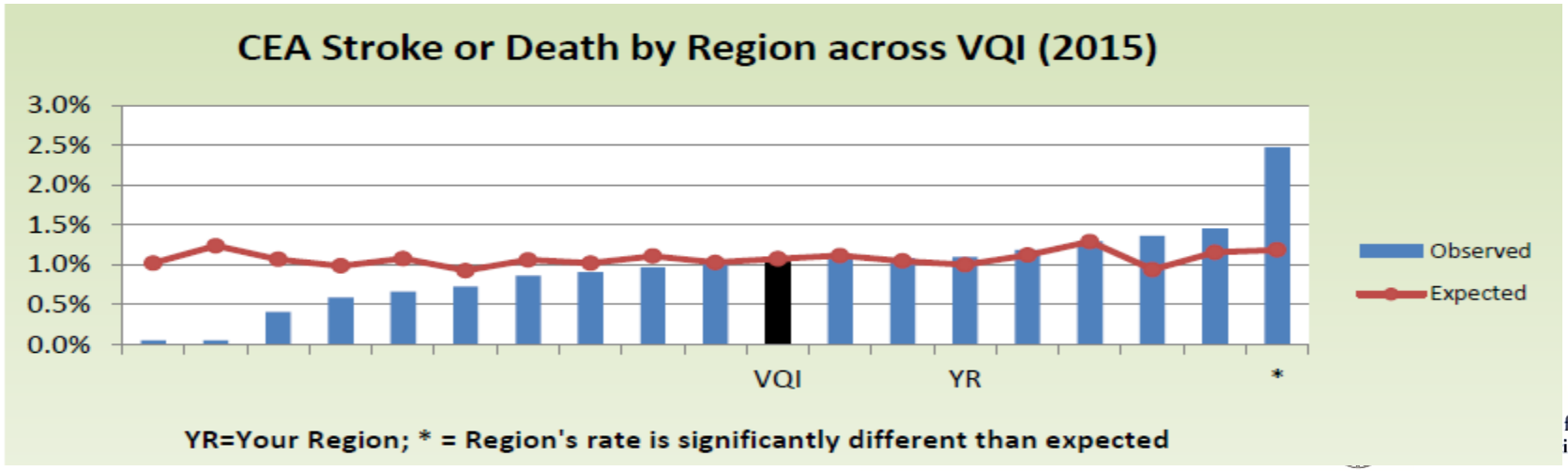
Society for Vascular Medicine

Vascular Quality Initiative®

Carotid Endarterectomy: Stroke or Death in Hospital

2015 procedures, elective, excluding prior ipsilateral CEA and concomitant CABG





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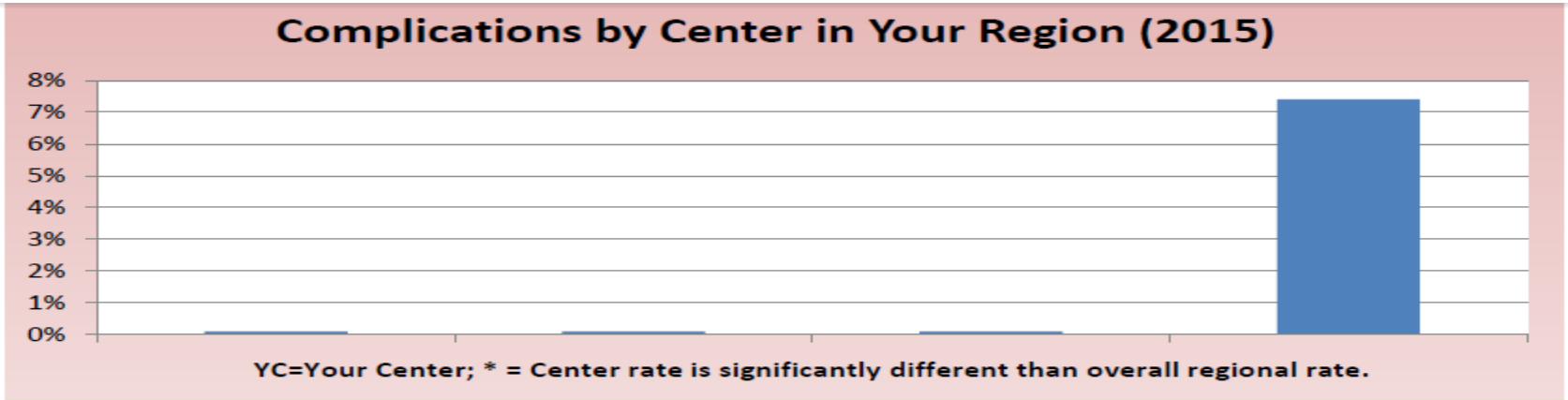
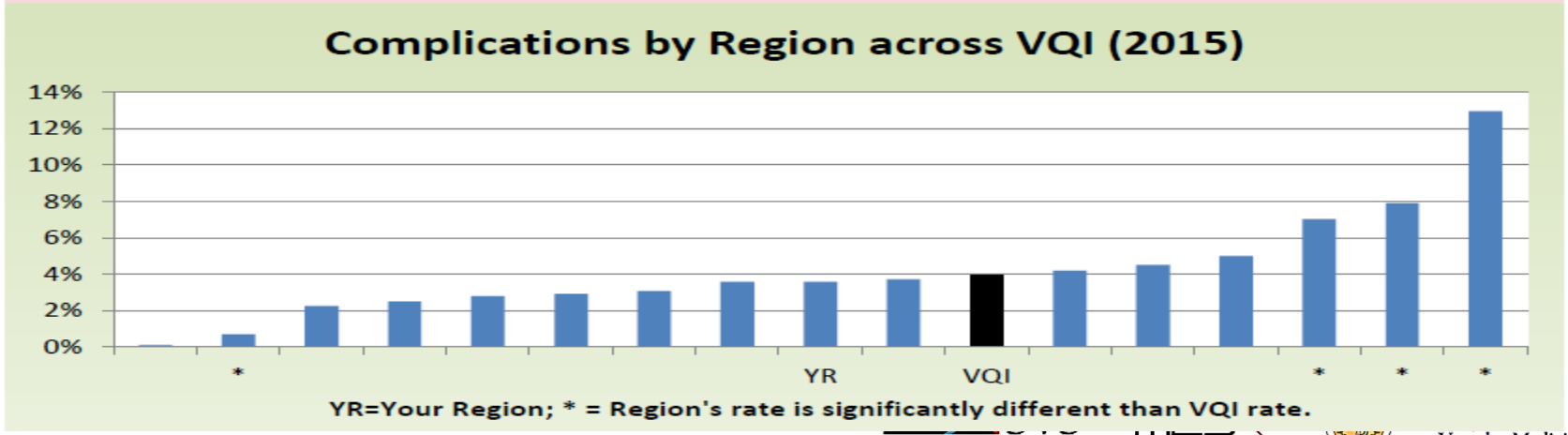
Infrainguinal Bypass: Percentage of Major Complications

2015 procedures, Major complications= In hospital death, ipsilateral amputation or graft occlusion.

Includes only patients with Indication=Rest Pain or Tissue Loss





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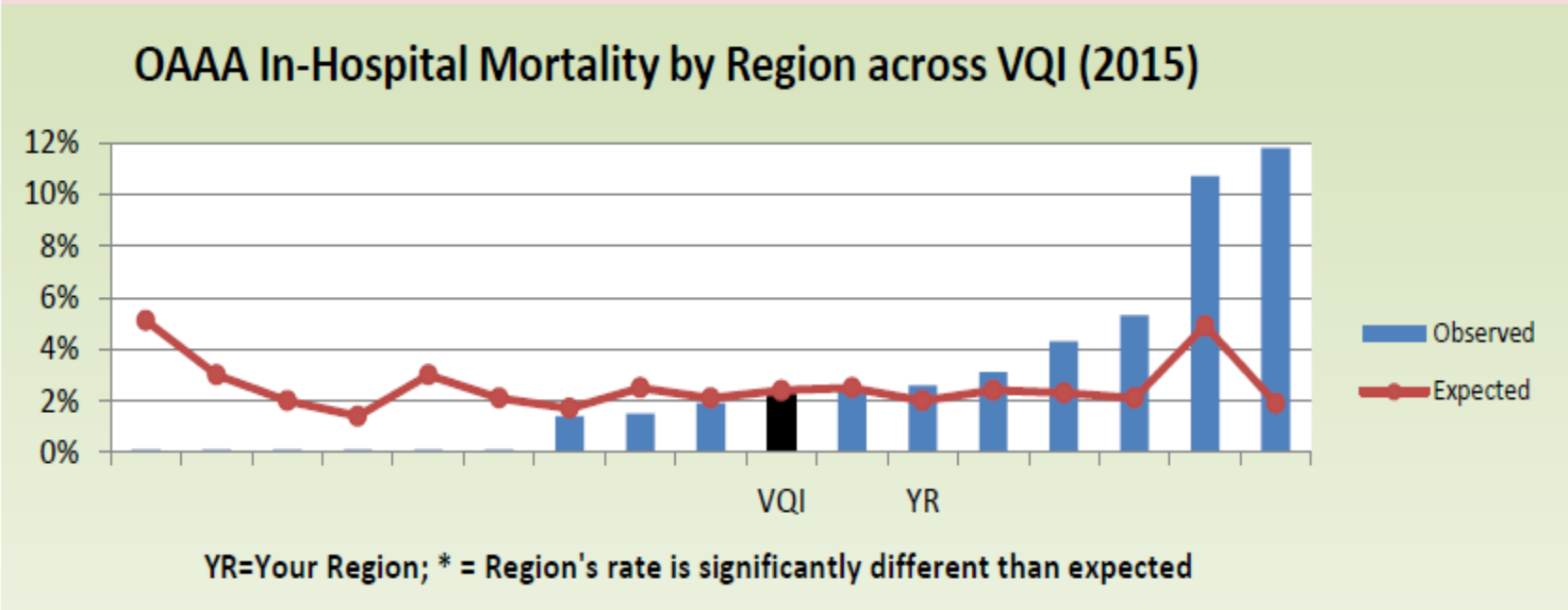
Vascular Medicine

Open Non-ruptured AAA: In hospital Mortality

2015 procedures, excluding weekend procedures



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Arterial Quality Council Update

Todd Vogel, MD

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Roles of the Module Committees

- Participation in all AQC calls (or designation of an alternative) this applies to all AQC members
- Yearly report generation including:
  - Identification of opportunities for improvement of the module (compile a list of data points that can be changed, removed or added)
  - LTFU within the module
  - Missing variable report
  - Data trends and outcomes
- Evaluation of PQRS/QCDR measure from their respective module, and identification of possible quality initiatives
- Generation of risk calculators and yearly updates to the models

Statistical Audits

- Analyzing sites with high risk and low to zero outcomes
  - validate data that might be under-reported, such as complications
- Pilot with oAAA:
  - The POMI rate for non-urgent OAAA in the data = 5.3%.
  - after developing a model to predict post op MI after open AAA repair we audited 173 cases with highest risk for MI, and found 5.8% previously not reported MI
  - Based on the model, we estimate that the under-reporting rate for MI after all open AAA cases is 1.9%, which means we miss 26% of MIs that likely occur

National QI projects:

Statin/AP therapy
Follow-up imaging after EVAR
Appropriateness of care

Research Advisory Council Update: Andrew Hoel, MD

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Research Advisory Council (RAC)

Approved Project list on line:

http://www.vascularqualityinitiative.org/wp-content/uploads/VQI_Approved_Projects_List-12.18.15.pdf

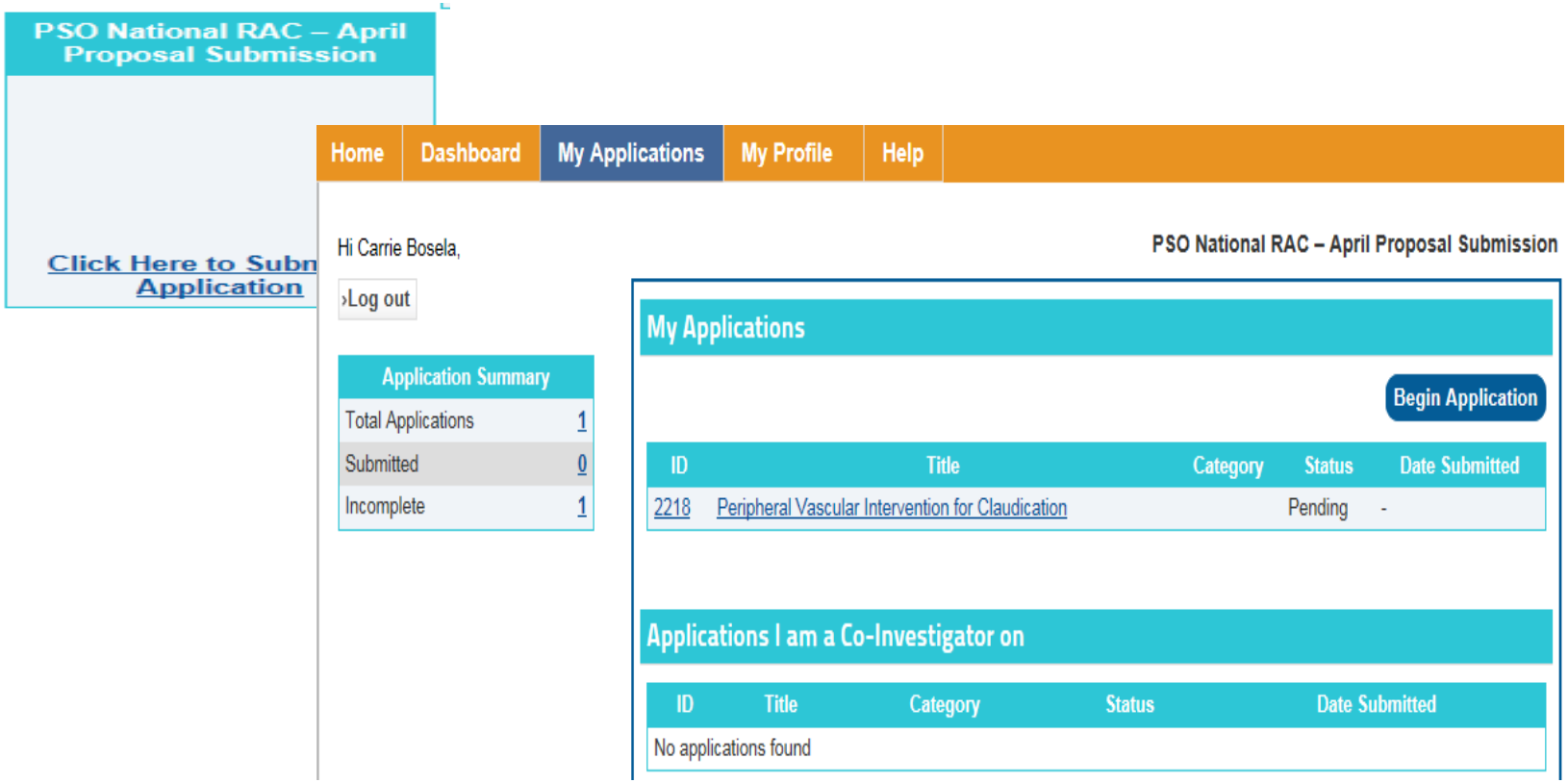
Quality Research-Related

- **VQI Approved Projects List – December 2015**
- List of VQI Presentations – November 2015
- List of VQI Publications – November 2015
- National Quality Research Dataset Request Process
- Regional Quality Research Dataset Request Process
- VQI Presentations – VAM 2014

Research Advisory Council (RAC)

National Proposals New Portal for Submission:

http://abstracts123.com/svs1/



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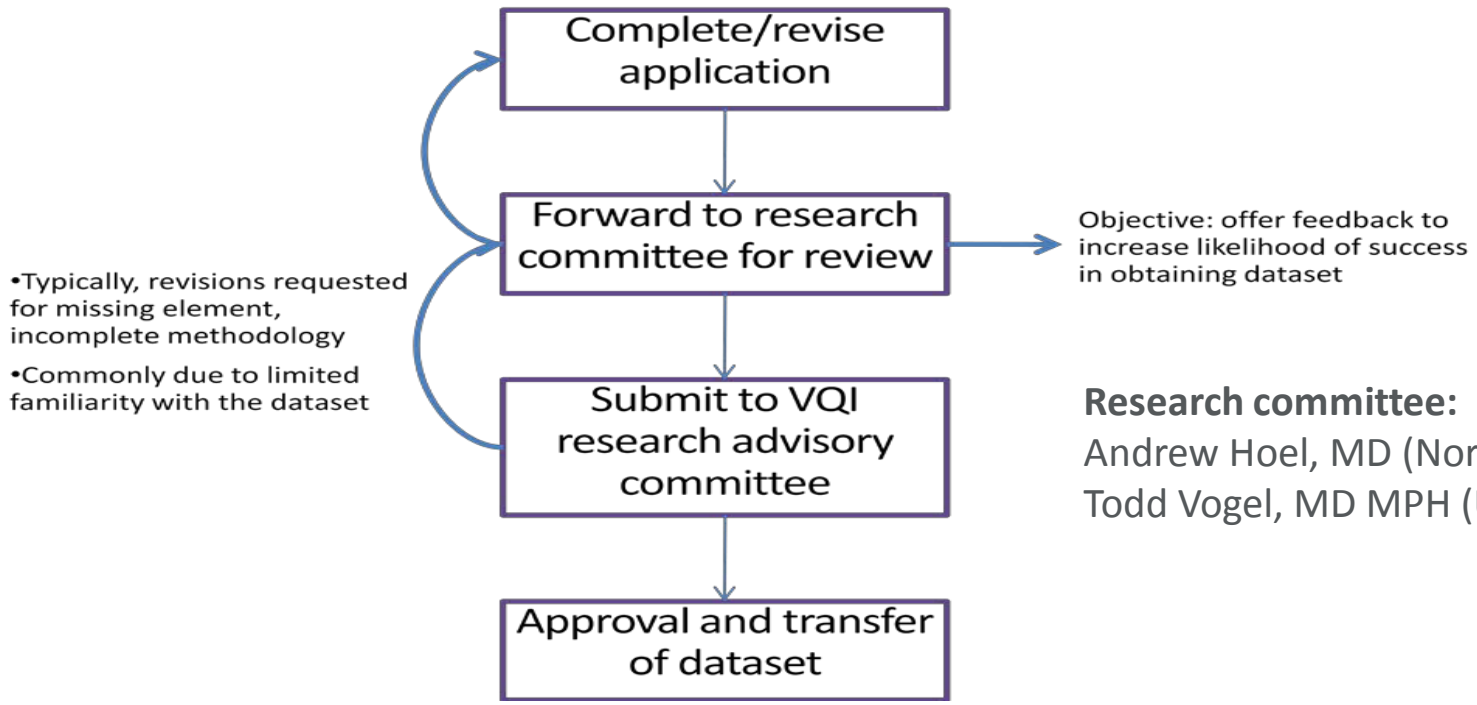
Research Advisory Council (RAC)



Research committee:
Andrew Hoel, MD (Northwestern)
Todd Vogel, MD MPH (U of Missouri)

Research Advisory Council (RAC)

- MAVSG projects:

Project	Lead	Status
Comparison of eversion and patch endarterectomy	Joe Schneider, CDH	Published JVS 2015
Comparison of aortoiliac reconstruction techniques	Karen Ho, NM	Presented MVSS 2015
Effect of antiplatelet and statin on vascular patients with ESRD	Bob Steppacher, UC	Presented SCVS 2015
CEA in octo and nano-genarians	Joe Schneider, CDH/NM	Submitted MVSS 2015
Impact of readmission on mortality in aneurysm repair	Andy Hoel, NM	Pending data Apr 2016
Atherectomy outcomes in PAD	Kamal Gupta, KUMC	Submitted to RAC

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Venous Quality Council Update:

Sapan Desai, MD

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IVC Filter Registry

- 4778 procedures
- Current workgroup developing an IVC filter retrieval reminder report/email notification
- CMS Quality Measure: Appropriate management of Retrievable IVC filters

Varicose Vein Registry

- 3245 procedures
- Focus on vein centers, integrate with vein-specific EMR vendors
  - VeinSpec
  - SonoSoft
  - StreamlineMD
  - MedStreaming
- Includes Quality of Life variables

Varicose Vein Registry

Presentation at AVF:

Andrea T. Obi, MD - Vascular Surgery Fellow, University of Michigan

Conclusions

The VQI VVR provides complete assessment of varicose vein interventions, and is useful for monitoring changes after treatment. Modern day varicose vein surgery is characterized by predominately endovenous treatment of axial vein reflux, phlebectomy of clusters, and dramatic improvements in both VCSS and patient reported outcomes .

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Governing Council Update:
Joe Schneider, MD

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GC meeting at VEITH

- Dr. Goodney provided an overview of the Audit Subcommittee's efforts to link patients in the Vascular Quality Initiative to their respective Medicare claims for long-terms outcomes such as stroke, amputation, need for further procedures, and overall survival. In the near future, VQI participants will be able to link to clinical-claims datasets as an ongoing mechanism for long-term effectiveness evaluation.

GC meeting at VEITH

Dr. Kraiss provided an overview of the strategic goals that Executive Committee has set for the next year, which include:

- Stimulating quality improvement projects
- Maximizing the value of the VQI for key groups (including COPI reports and other registry reports)
- Strengthening collaborations with external stakeholders and disseminating findings to a wider audience
- Enhancing registry effectiveness
- Increasing VQI membership and engagement through the regional quality groups
- Fostering industry relationships
- Increasing operational efficiencies

QI/PI Projects:

- Andrew Hoel, MD
- Cynthia Bik, RN-CES
- Jose Borromeo, MD
- Kamal Gupta, MD
- Harold Hsu, MD

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Andrew Hoel, MD

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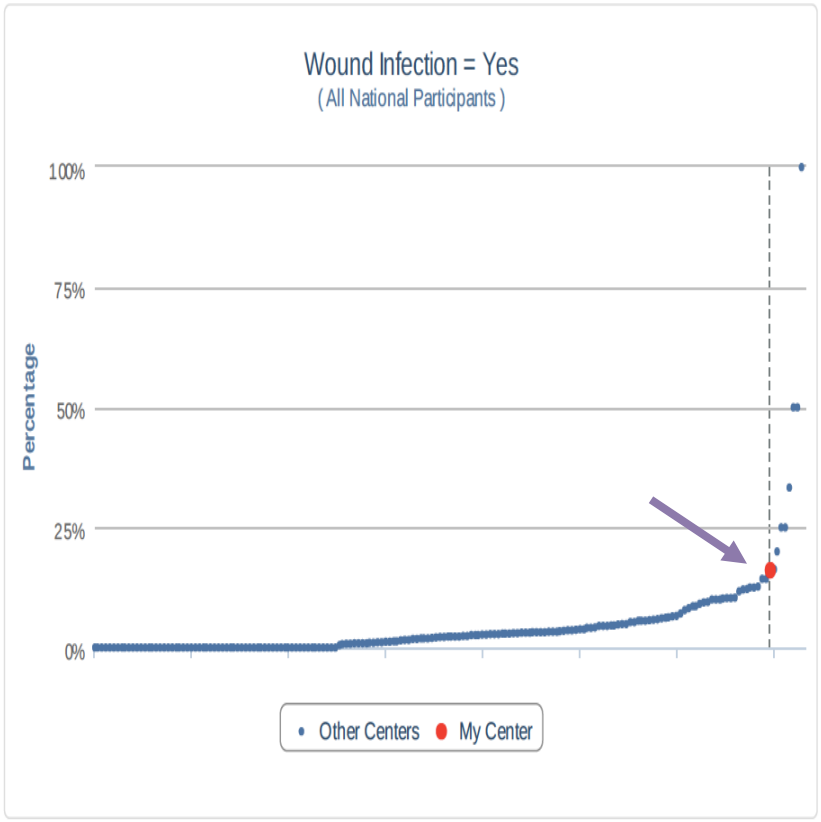
Vascular SSI initiative

Katherine E. Hekman MD PhD; Andrew W. Hoel MD
MAVSG Semi-Annual Meeting
Des Moines, IA
11 April 2016

SSI after Lower Extremity Bypass

The initial seed . . .



- NMH gross composite infection rate for LEB = **13.6%**
- National LEB benchmark = 2.7%

- 41 wound infections in 297 bypasses with groin incisions (2011-10/31/15)
- Chart review:
  - 22 wound infections occurred at the groin wound

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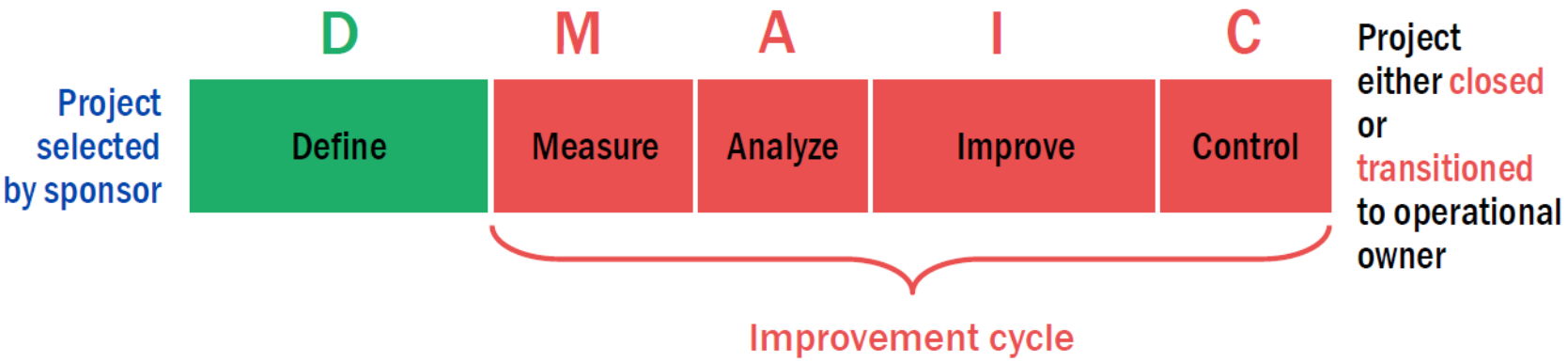
SSI after Lower Extremity Bypass

DMAIC Method: process improvement based upon a Lean/Six Sigma approach



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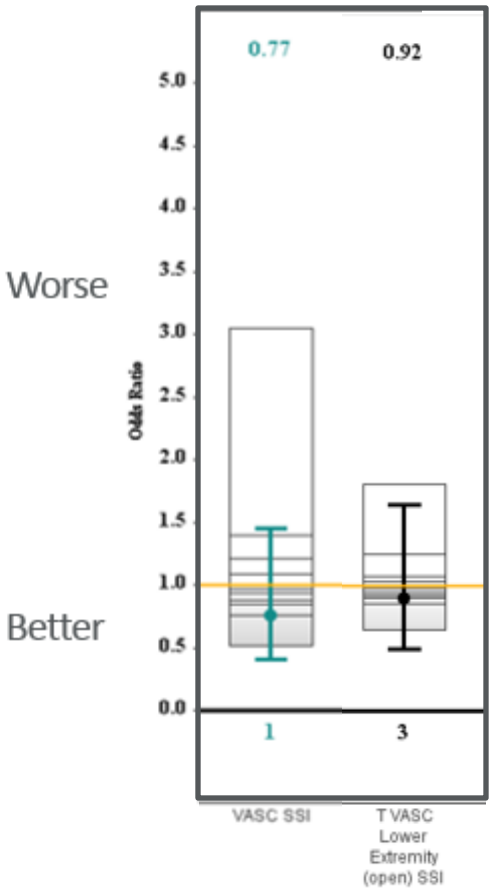
D

Define

SSI after Lower Extremity Bypass

Patient factors and NSQIP Data

VQI Variable	Center (N=297)	Regional (N=867)	National (N=28,863)
Age (median)	66	66	67
Male Gender (%)	59	69	68
Non-white Race (%)	38	14.5	11.4
Diabetes (any, %)	45.5	40.4	48.1
Dialysis (%)	8.5	4.8	5.6
Hospital transfer (%)	**12.5**	7.1	7.7
BMI (median)	26.4	27.4	26.9
D/C rehab/SNF (%)	31	25	27.7



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D

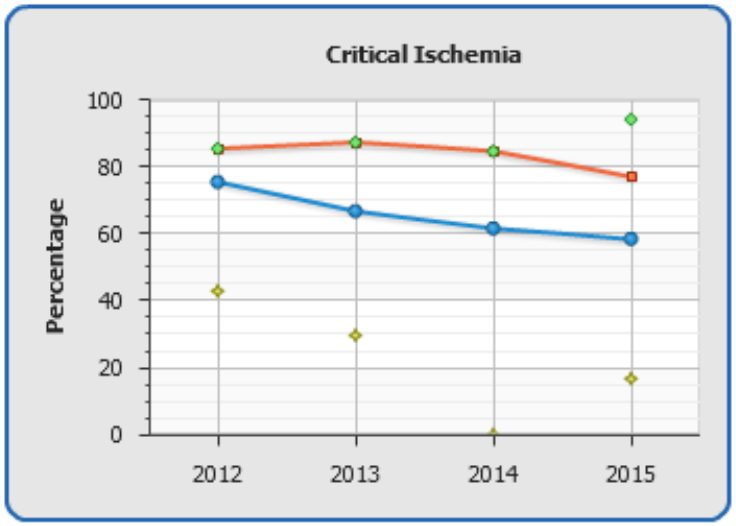
Define

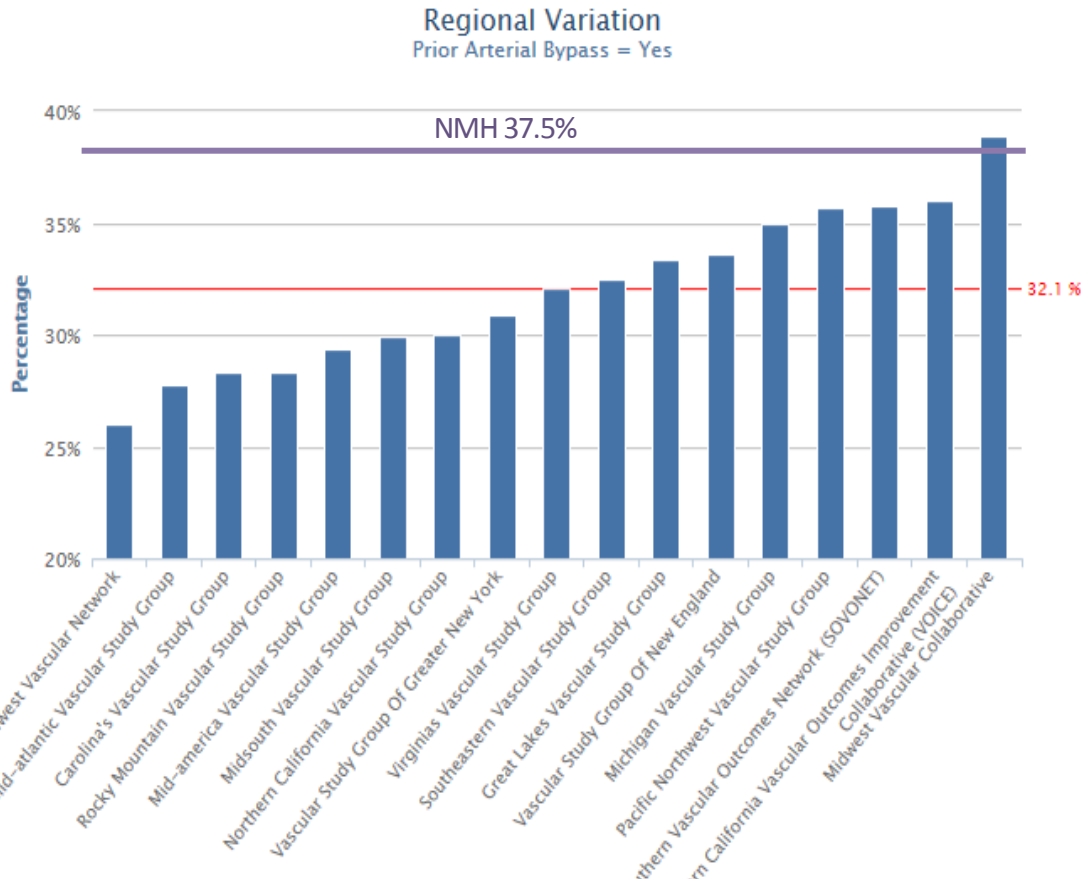
SSI after Lower Extremity Bypass

Patient factors and NSQIP Data

VQI Variable	Center (N=297)	Regional (N=867)	National (N=28,863)
CLI or acute indication (%)	**80.5**	49.6	63.8
Prior bypass (any, %)	**37.5**	29.2	32.1

Critical Ischemia





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D

Define

Objectives

- Better understand wound infections after lower extremity bypass
  - Focus on groin incisions
  - Identify modifiable risk factors from our own data
  - Identify modifiable risk factors from literature
- **Implement quality improvement initiative to reduce infection**
- Track infection rates over time

Our data: SCIP measures

- Timely administration of appropriate antibiotics for surgical prophylaxis when appropriate
- Sterile prep with chlorhexidine for intact surgical fields, betadine for grossly infected surgical fields
- Intraoperative normothermia

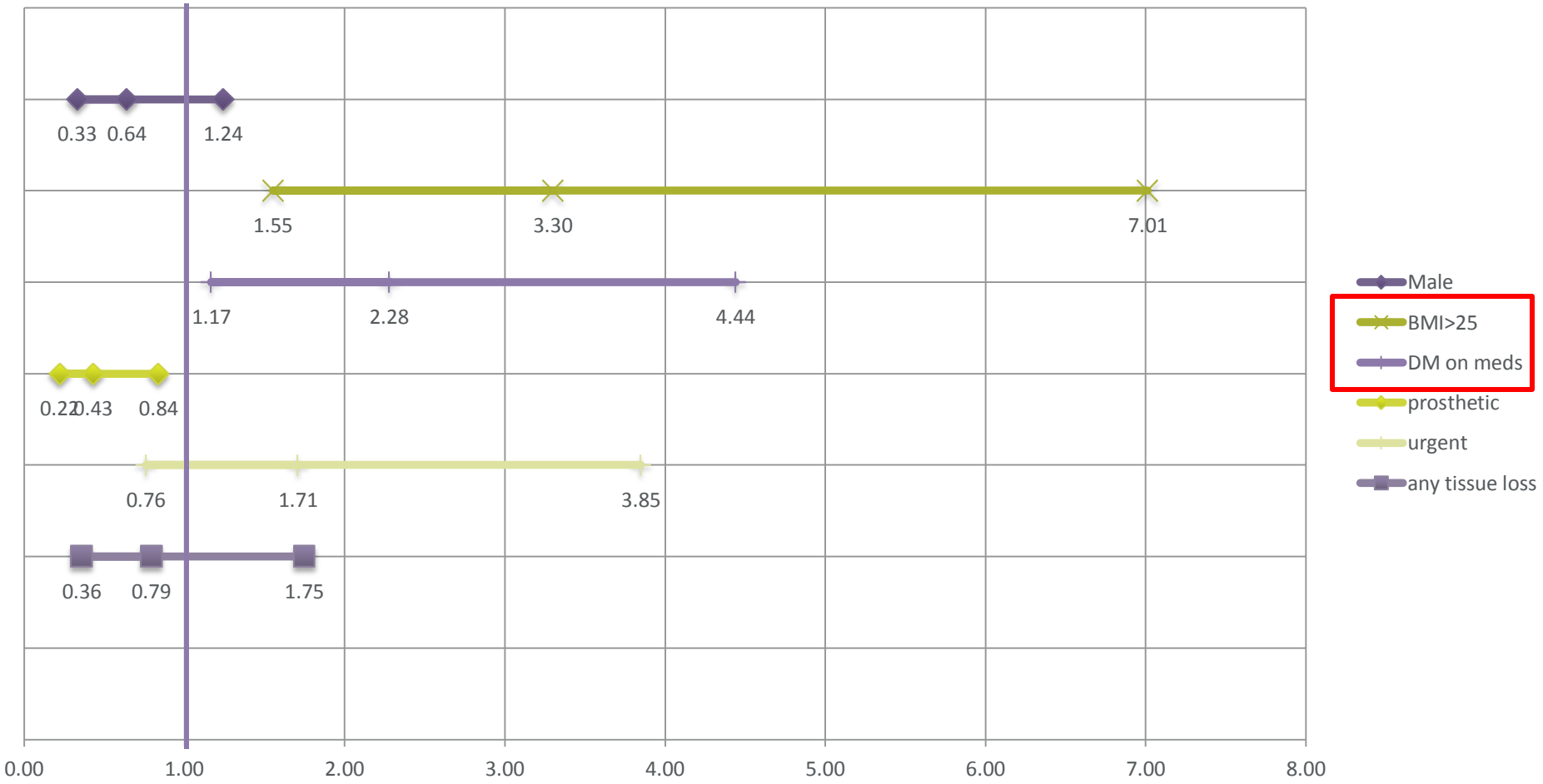
VQI Variable	Center (N=297)	Regional (N=867)	National (N=28,863)
Antibiotic prophylaxis (%)	98	96.2	9.52
Chlorhexidine + EtOH prep (%)	97	89	75
Intraoperative Normothermia (%)	96	NA	NA
Transfusion units (mean)	2.0 +/- 3.3	1.0 +/- 2.3	0.9 +/- 2.2
Ioban isolation	??		

M A

Measure | Analyze

Our Data: Risk Factors

- Odds ratio of groin infection for patient factors



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Literature review: pre-operative factors

A I

Analyze | Improve

Original Investigation

Evidence for a Standardized Preadmission Showering Regimen to Achieve Maximal Antiseptic Skin Surface Concentrations of Chlorhexidine Gluconate, 4%, in Surgical Patients

Charles E. Edmiston Jr, PhD; Cheong J. Lee, MD; Candace J. Krepel, MS; Maureen Spencer, MEd; David Leaper, MD; Kellie R. Brown, MD; Brian D. Lewis, MD; Peter J. Rossi, MD; Michael J. Malinowski, MD; Gary R. Seabrook, MD

- Evaluation of skin chlorhexidine concentration in healthy volunteers after 2 or 3 showers.
  - Surrogate outcome for antimicrobial effect.
  - Significant increase in skin concentration with “pause”.

A I

Analyze | Improve

Literature review: intraoperative factors

Vertical or Transverse Incisions for Access to the Femoral Artery: A Randomized Control Study

Jan Swinnen,[1] Alex Chao,[1] Alok Tiwari,[1] John Crozier,[2] Mauro Vicaretti,[1] and John Fletcher,[1] NSW, Australia

	Vertical incisions	Transverse incisions	P
Wound complication	47.5% (29/61)	12.7% (7/55)	<0.0001
Wound infection	10/61	3/55	0.062
Wound breakdown	21.3% (13/61)	9.1% (5/55)	0.069
Lymph leak	27.9% (17/61)	12.7% (7/55)	0.01
Lymph collection	6.6% (4/61)	18.2% (10/55)	
Difficult access	0	12.7% (7/55)	

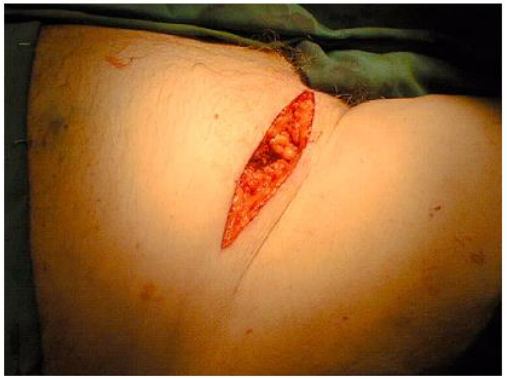

Fig. 1. The transverse wound with hip extended; note how the wound closes.

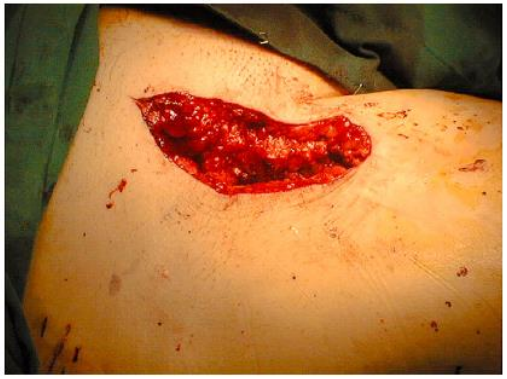

Fig. 3. The vertical wound with hip extended; note how the wound gapes.

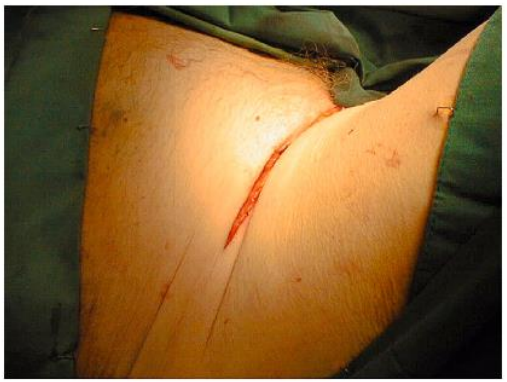

Fig. 2. The transverse wound with the hip flexed; note how the wound closes further.

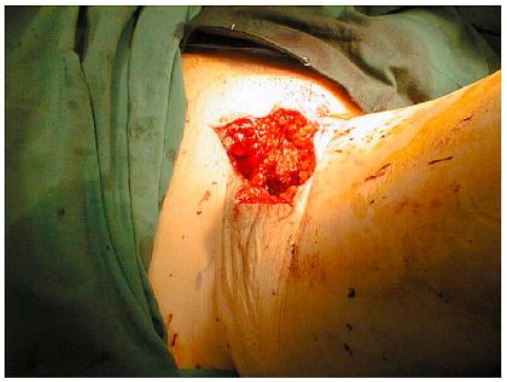

Fig. 4. The vertical wound with hip flexed; note how the wound gapes further.

Lower wound complication rate with transverse/oblique incision.

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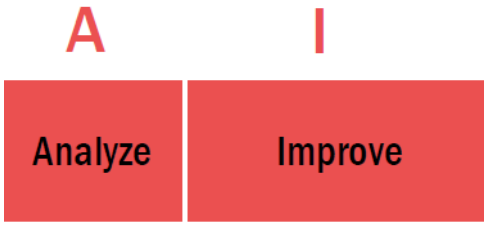
Study criteria:



Single arm, prospective, consecutive enrolling quality improvement initiative.

Inclusion criteria:

- Patients who are undergoing or may undergo a vascular bypass (infrainguinal and suprainguinal) for any indication.
  - (e.g. a patient undergoing a planned fem-pop bypass; OR a patient undergoing a LE angiogram who may require a fem-pop bypass in the same procedure)

    AND
- The patient will have a groin incision as a part of their procedure.
  - (e.g. femoral artery or saphenofemoral exposure)

Vascular Groin SSI Reduction Bundle

A Analyze | I Improve

Pre op
- Chlorhexidine (Hibiclens) showers
  - 1 night before, 1 morning of surgery

Intra op
- Transverse groin incision

Post op
- Chlorhexidine (Hibiclens) shower POD2

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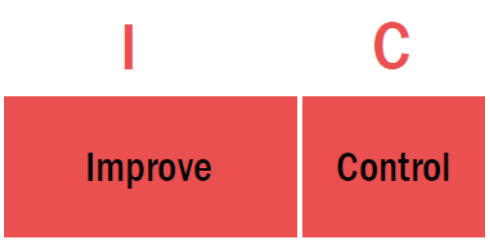

- Estimated sample size 410 patients.
- Initiation Mar 1:
  - Vascular team training
  - Nursing training (12W and 11W wards)
- Rolling evaluation every 6-months.
  - P chart
  - Raw rates, risk adjusted.
- Protocol refinement

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Vascular Quality Initiative®

Cynthia Bik, RN-CES

SVS Society for Vascular Surgery m2s Society for Vascular Medicine

IHC PV Department - "Biosketch" cards

A small process improvement project to increase patient satisfaction with our Vascular team; from office – to hospital – and back to office for follow-up.

ACC Quality First SmartBrief November 7, 2013

Patients report higher satisfaction when given physician bio:

A study from Vanderbilt University Medical Center found higher satisfaction scores among hospital patients who were given some biographic information about their physicians, compared with those who did not receive a "biosketch" card. Lead researcher Dr. Alex Jahangir called the cards "an easy, cheap intervention" that could be helpful as health care reimbursements shift to rewarding quality rather than quantity of care. The study was published in the Journal of Orthopaedic Trauma. HealthDay News (11/6

We created a "bio card" for our patients so they can put a face to the name.

OUR VASCULAR TEAM

Meet the physicians, providers and nurses who may participate in your hospital care.

Jose Borromeo, M.D.
Medical School: University of the Philippines
Residency: Columbia University
Vascular fellowship: Yale
Board Certification: Vascular Surgery

David Chew, M.D.
Medical School: National University of Singapore
Residency: Columbia University
Vascular fellowship: Harvard
Board Certification: Vascular Surgery

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Jane Gandy, PA-C
Education: University of North Dakota School of Medicine
Certification: National Commission on Certification of Physician Assistants

Lindsey, Registered Nurse
Mackenzie, Registered Nurse
Vascular Hospital Staff

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- participation in a national quality initiative
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Hours: Monday - Friday, 8 a.m. to 4:30 p.m.

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"Our Vascular Team"

- This card is given to patients in the office when they are scheduled for surgery and again when admitted.
- We build in the expectation that we are a "team" and one, several, or all of our surgeons may see you during your stay.
- We put a face to our PV hospital nurses who will see the patient several times a day if needed and will be in constant communication with a surgeon if anything is needed and begin planning your discharge to home.
- We put a face to our Mid Level Provider who may see them for their first post op visit in one week and …..
- We give them a 24 hour contact number to call if there is a question/problem, either while in the hospital or after discharge, so we can deal with any situation promptly.

Vascular Quality Initiative®

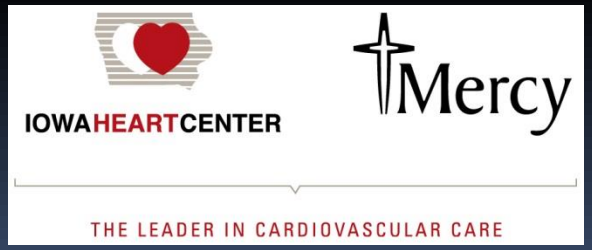
Jose Borromeo, MD

SVS Society for Vascular Surgery | m2s | Society for Vascular Medicine

DEEP VENOUS THROMBOSIS

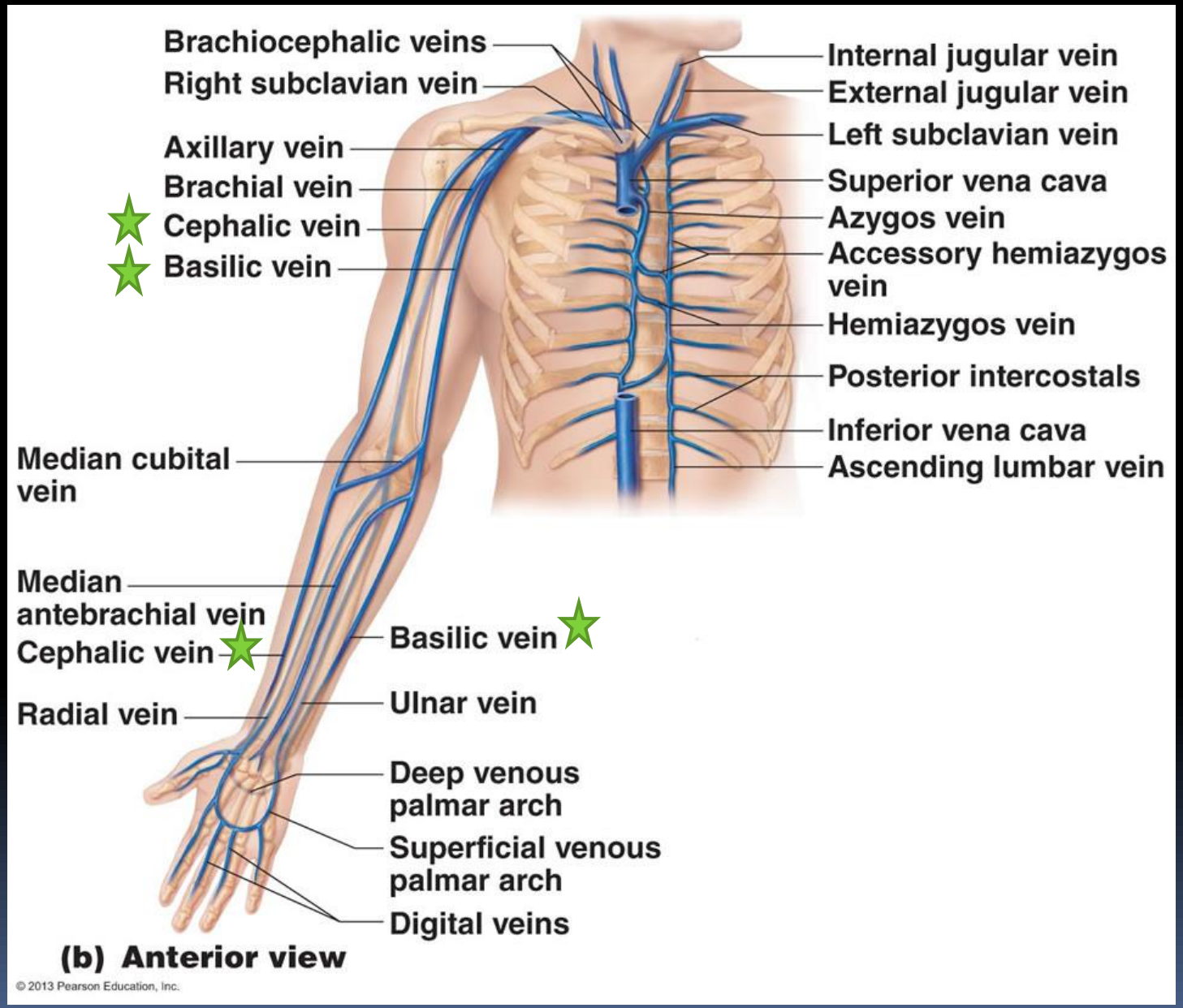
A PRACTICAL APPROACH TO IMPROVING CLINICAL OUTCOMES

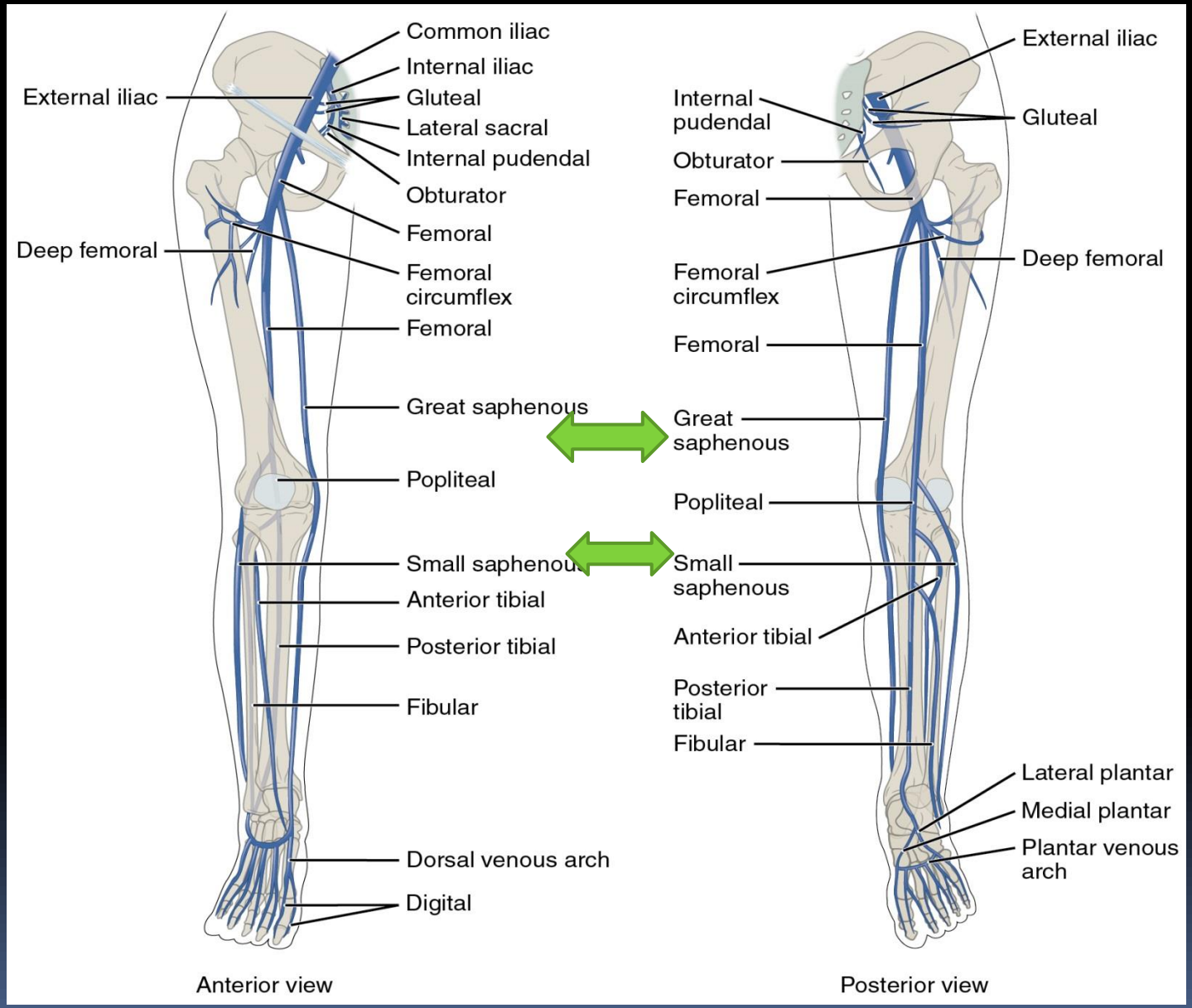
Jose M. Borromeo M.D.
Vascular Surgeon
Iowa Heart Center



Epidemiology and Clinical Significance

- Annually 900,000 cases of VTE in the US
- 275,000 new cases annually in the US
- It is estimated that 684,000 cases of DVT and 434,000 PE with 543,000 fatalities from VTE in the EU
- 1% incidence with 0.36% mortality in all hospitalized patients


Brachiocephalic veins
Right subclavian vein
Axillary vein
Brachial vein
Cephalic vein
Basilic vein
Median cubital vein
Median antebrachial vein
Cephalic vein
Radial vein
Basilic vein
Ulnar vein
Deep venous palmar arch
Superficial venous palmar arch
Digital veins
Internal jugular vein
External jugular vein
Left subclavian vein
Superior vena cava
Azygos vein
Accessory hemiazygos vein
Hemiazygos vein
Posterior intercostals
Inferior vena cava
Ascending lumbar vein
(b) Anterior view
© 2013 Pearson Education, Inc.


Common iliac
Internal iliac
External iliac
Gluteal
Lateral sacral
Internal pudendal
Obturator
Femoral
Deep femoral
Femoral circumflex
Femoral
Great saphenous
Popliteal
Small saphenous
Anterior tibial
Posterior tibial
Fibular
Dorsal venous arch
Digital
Anterior view
External iliac
Internal pudendal
Gluteal
Obturator
Femoral
Deep femoral
Femoral circumflex
Femoral
Great saphenous
Popliteal
Small saphenous
Anterior tibial
Posterior tibial
Fibular
Lateral plantar
Medial plantar
Plantar venous arch
Posterior view

PATHOPHYSIOLOGY

- Abnormal functioning of the lower extremity veins results in venous insufficiency
- Venous insufficiency results from injury to vein walls and valves
- Tissue changes are a result of prolonged venous hypertension and stasis
- Inflammation, cellular and molecular modulators result in delayed vascular and cutaneous changes

PATHOPHYSIOLOGY OF DVT

- Virchow's Triad (1850)
  - Stasis
  - Vessel Wall Injury
  - Hypercoagulability
- Stewart (1974)
  - Thrombosis and inflammation
- Inflammatory mediators up-regulate pro-coagulant factors and inhibit fibrinolysis
  - (Selectins)

Pathophysiology of DVT

- Disturbance in the normal balance of hemostasis and thrombolysis
- Initial thrombus is composed of RBC and fibrin
- Subsequent increase in pro-inflammatory factors leading to fibrinolysis and vessel wall fibrosis
- Clinical effects due to venous obstruction and valvular reflux

Complications of DVT

Early:

- Acute Pulmonary Embolism

Late:

- Recurrent Venous thromboembolism (VTE)
- Post-thrombotic syndrome (PTS)

Thrombotic risk factors and Hypercoagulability

Congenital Hypercoagulability

- Factor V Leiden
- Protein C Deficiency
- Antithrombin
- Prothrombin G20210A
- Protein S Deficiency
- Factor XI excess

Acquired Hypercoagulability

- Advanced age
- Malignancy
- Antiphospholipid antibodies

Situational Hypercoagulability

- Surgery
- Pregnancy
- Hormone therapy
- Trauma
- Oral contraceptives

Adapted from Shalhub S, Meissner M, Therapy in Vascular and Endovascular Surgery, 5th ed. P. 877.

Risk factors (causes) for the development of venous thrombosis

Inherited thrombophilia
Factor V Leiden mutation
Prothrombin gene mutation
Protein S deficiency
Protein C deficiency
Antithrombin (AT) deficiency
Rare disorders
Dysfibrinogenemia
Acquired disorders
Malignancy
Presence of a central venous catheter
Surgery, especially orthopedic
Trauma
Pregnancy
Oral contraceptives
Hormone replacement therapy
Tamoxifen, Thalidomide, Lenalidomide
Immobilization
Congestive failure
Antiphospholipid antibody syndrome
Myeloproliferative disorders
Polycythemia vera
Essential thrombocythemia
Paroxysmal nocturnal hemoglobinuria
Inflammatory bowel disease
Nephrotic syndrome

Natural History of DVT

- Proximal extension is variable
- Recanalization as a normal process of healing
  as early as 6-12 weeks of an acute event
- Greater recanalization is seen in patients who present with transient risk factors
- Prolonged recanalization is proportional to the degree of thrombus burden
- Greater recurrence of DVT inpatients with diminished recanalization

Natural History of DVT

- Calf veins are the most common site of origin, although 40% arise from the proximal veins
- In-hospital mortality rate is 5-12%
- If untreated, 30-50% will develop PE, 10% of which are fatal
- Incidence of recurrent VTE with treatment is <5%

Natural History of DVT

- 20% of all first time VTE are associated with underlying malignancy
- 1 in 200 of patients with cancer will develop VTE
- Most recurrent VTE occurs after anticoagulants have been discontinued (highest 6 to 12 after the index event)
- Cumulative recurrence rates as high as 23%

- Risk of recurrence is related to the underlying thrombotic risk factors
- Unprovoked DVT carries a threefold risk of recurrence compared to those with transient risk factors
- Calf vein DVT have a 23% risk of proximal extension

Pulmonary Embolism (PE)

- Most serious early complication of acute DVT
- Can occur in up to 50-80% of symptomatic DVT patients
- Can occur in 7-17% of patients presenting with acute upper extremity DVT
- Can occur in up to 10% of patients with calf vein DVT (risk less than 2% for fatal PE)

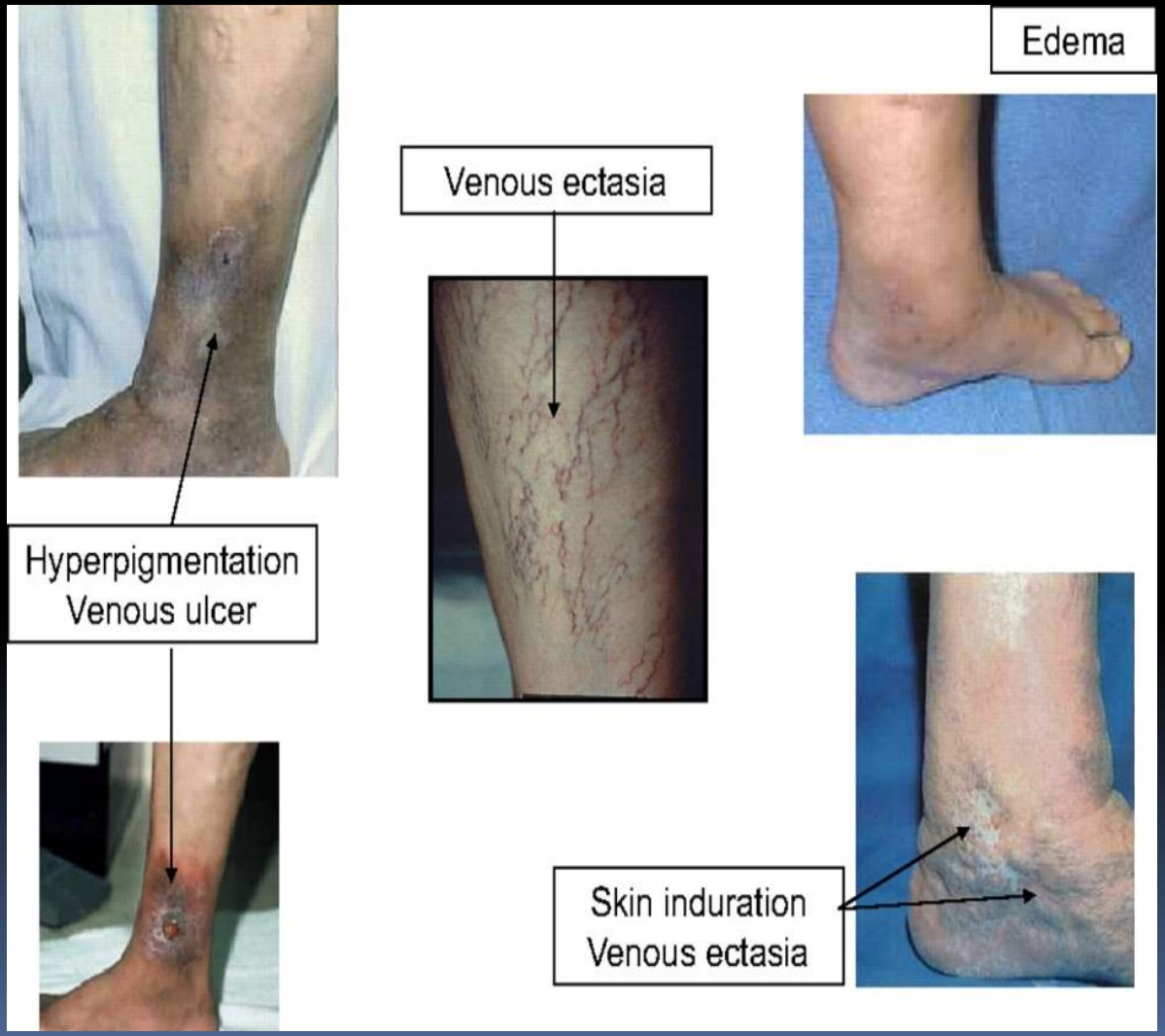
Risk of recurrence of VTE

- VTE provoked by surgery, 3% at 5 years
- VTE provoked by transient nonsurgical risk factor, 15% at 5 years
- Unprovoked VTE not related to cancer, 30% recurrence at 5 years
- VTE associated with cancer, 15% annual risk of recurrence
- Distal DVT, ½ risk than after a proximal DVT
- Second unprovoked DVT/PE, 50% higher

Post-thombotic syndrome(PTS)

- Long-term sequelae of LE VTE
- 29-79% of patients present with "some degree" of PTS
- 7-23% have severe manifestations
- 4-6% develop ulceration
- Patients who present with recurrent VTE have 6-fold increased incidence of PTS
- Result from venous hypertension- proximal obstruction and distal reflux

Post-Thrombotic Syndrome(PTS)



Diagnosis and Clinical Presentation of Acute DVT

- Calf pain
- Calf swelling
- Calf and leg tenderness
- Prominent superficial veins
- Pain with foot dorsiflexion (Homan's sign)

*Up to 70% of patients with Sx consistent with DVT will not have it, and up to 50% of patients with DVT may lack any specific signs and symptoms

Pretest probability of deep vein thrombosis (Wells score)

Clinical feature	Score
Active cancer (treatment ongoing or within the previous six months or palliative)	1
Paralysis, paresis, or recent plaster immobilization of the lower extremities	1
Recently bedridden for more than three days or major surgery, within four weeks	1
Localized tenderness along the distribution of the deep venous system	1
Entire leg swollen	1
Calf swelling by more than 3 cm when compared to the asymptomatic leg (measured below tibial tuberosity)	1
Pitting edema (greater in the symptomatic leg)	1
Collateral superficial veins (nonvaricose)	1
Alternative diagnosis as likely or more likely than that of deep venous thrombosis	-2
Score	
High probability	3 or greater
Moderate probability	1 or 2
Low probability	0 or less
Modification:	
This clinical model has been modified to take one other clinical feature into account: a previously documented deep vein thrombosis (DVT) is given the score of 1. Using this modified scoring system, DVT is either likely or unlikely, as follows:	
DVT likely	2 or greater
DVT unlikely	1 or less

Adapted from:

1. *Wells PS, Anderson DR, Bormanis J, et al. Value of assessment of pretest probability of deep-vein thrombosis in clinical management. Lancet 1997; 350:1795*
2. *Wells PS, Anderson,DR, Rodger M, et al. Evaluation of D-dimer in the diagnosis of suspected deep-vein thrombosis. N Engl J Med 2003; 349:1227.*

Diagnosis

- Signs and symptoms are nonspecific and of varying specificities
- Requires confirmatory testing that is resource intensive
- Duplex ultrasound as the primary diagnostic modality
- D-Dimer is useful but specificity depends highly on the clinical probability of disease
- Best strategy incorporates clinical, D-dimer and selective ultrasound evaluation

Diagnostic Testing

- Duplex ultrasound
- D-Dimer
- CT venography
- MR Venography
- Contrast Venography
- Impedance plethysmography
- Isotope Scintigraphy

D-Dimer

- Products of degradation of cross-linked fibrin by plasmin
- Reflect the presence of intravascular fibrin, sensitive for thromboembolism
- Low sensitivity (35%): Elevations seen in DIC, malignancy, post-op states, infection, trauma and pre-eclampsia and with high bilirubin levels
- Most useful in patients with low pre-test probability of disease and negative result

Treatment

- Extremity elevation- short term
- Immediate anticoagulation
- Early Mobilization
- Compression therapy
- Limited use of IVC Filter
- Selective thrombolysis and catheter based interventions

Anticoagulation

- Unfractionated Heparin (UFH)
- Low Molecular weight heparins (LMWH)
- Fondaparinux
- Vitamin K antagonists
- Direct thrombin inhibitors (IV Lepirudin, Bivalrudin)
- Apixaban
- Rivaroxaban
- Edoxaban
- Dabigatran
- Thrombolysis

ACCP Guidelines: Antithrombotic Therapy for VTE Disease (Chest Feb 2012, updated Nov 2015)

- Shorter duration of initial therapy
- Role of time-limited and Extended Therapy
- Recommendations for VTE and malignancy
- Updates with NOACs
- Limited role for IVC filters
- Recommendations for systemic lysis
- Recommendations for catheter based therapy

- Duration of therapy is patient specific
- Careful risk factor assessment
- Strong need to evaluate individual patient risks of anticoagulant therapy (HAS BLED)
- Extended therapy for unprovoked VTE
- Extended therapy for cancer patients
- Recommendations for VKA and LMWH and NOACs (increasing role of new agents)

ACCP Guidelines: Antithrombotic Therapy for VTE Disease (Chest Feb 2012, updated Nov 2015

- Patients with proximal DVT/PE are treated with long-term (3 months) of anticoagulation
- In absence of cancer, NOACs are suggested over VKA (and VKA over LMWH)
- In patients with cancer-associated thrombosis, LMWH is suggested over VKA or NOACs
- If extended therapy is planned, there is no need to change agent after 3 months

ACCP Guidelines: Antithrombotic Therapy for VTE Disease (Chest Feb 2012, updated Nov 2015

- In patients with proximal DVT/PE provoked by surgery or by nonsurgical transient risk factor, 3 month treatment is recommended.
- In patients with distal DVT provoked by surgery, 3 month treatment is recommended
- Patients with UNPROVOKED DVT (isolated distal or proximal or PE), treatment for AT LEAST 3 months is recommended

ACCP Guidelines: Antithrombotic Therapy for VTE Disease (Chest Feb 2012, updated Nov 2015

- In patients with 1st episode of UNPROVOKED proximal DVT/PE, with low to moderate bleeding risk, EXTENDED THERAPY (no stop date) is suggested. In patients with high risk of bleeding, 3 month over extended therapy is recommended.
- Patients with 2nd UNPROVOKED VTE with low to moderate bleeding risk, EXTENDED Tx. Those with high bleeding risk, 3 month treatment only is recommended.

ACCP Guidelines: Antithrombotic Therapy for VTE Disease (Chest Feb 2012, updated Nov 2015

- Patients with DVT/PE and cancer, EXTENDED anticoagulation is recommended. (This is still suggested in high bleeding risk individuals)
- Patients stopping anticoagulant therapy and without contraindication to ASA, ASA is suggested.

ACCP Guidelines: Antithrombotic Therapy for VTE Disease (Chest Feb 2012, updated Nov 2015

- Patients with distal (calf vein) DVT without severe symptoms or risk for extension, serial imaging for 2 weeks is suggested over anticoagulation.

*Pts with high bleeding risk will benefit from serial imaging

*Anticoagulation is suggested if patients have severe symptoms, ongoing risk factors for extension or if extension is demonstrated on serial imaging)

ACCP Guidelines: Antithrombotic Therapy for VTE Disease (Chest Feb 2012, updated Nov 2015

- In patients with acute proximal DVT, they suggest anticoagulant therapy alone over catheter –directed thrombolysis.
- Patients with acute DVT/PE treated with anticoagulants, they recommend against the use of an IVC filter.

*Patients who are most likely to benefit from CDT who attach a high value to preventing PTS and lower value to complexity, cost and risk of bleeding with CDT are likely to choose CDT over anticoagulation alone.

ACCP Guidelines: Antithrombotic Therapy for VTE Disease (Chest Feb 2012, updated Nov 2015

- Suggest not using compression stockings routinely to *prevent* PTS. (In patients with acute or chronic symptoms, a trial of compression is justified)
- In patients with subsegmental PE and no proximal DVT and low risk for recurrent VTE, they suggest clinical surveillance over anticoagulation . (Anticoagulation is suggested in patients with high risk for recurrent VTE)

ACCP Guidelines: Antithrombotic Therapy for VTE Disease (Chest Feb 2012, updated Nov 2015

- In patients with acute PE associated with hypotension without a high bleeding risk, systemic (rather than CDT) is suggested.
- In patients with high bleeding risk, or failed systemic lysis with shock likely to cause death, catheter assisted thrombus removal is suggested if resources are available.

ACCP Guidelines: Antithrombotic Therapy for VTE Disease (Chest Feb 2012, updated Nov 2015

- Patients with recurrent VTE while on VKA or NOAC, they suggest switching to LMWH at least temporarily.
- For recurrent VTE while on LMWH, they suggest increasing the dose by ¼ to 1/3.

ACCP Guidelines: Antithrombotic Therapy for VTE Disease (Chest Feb 2012, updated Nov 2015

- VTE patients who are most likely to benefit from CDT
  - Iliofemoral DVT
  - Symptoms less than 14 days
  - Good functional status
  - Life expectancy greater than 1 year
  - Low risk of bleeding
  - Impending venous related gangrene

Table 15: Risk factors for bleeding with, and contraindications to use of thrombolytic therapy (both systemically and locally administered

Major Contraindications

- Structural intracranial disease
- Previous intracranial hemorrhage
- Ischemic stroke within 3 months
- Active bleeding
- Recent brain or spine surgery
- Recent head trauma with fracture or brain injury
- Bleeding diathesis

Relative indications

Systolic BP>180	Diastolic BP>110	Female
Recent bleeding	Recent surgery	Low BMI
Recent invasive procedure	Ischemic stroke >3 months	Race
Ongoing anticoagulation	Traumatic CPR	
Pericarditis/Pericardial fluid	DM retinopathy	
Pregnancy	Age > 75	

CHEST Guidelines, November 2015.

Table 11: Risk factors for bleeding with anticoagulant therapy and estimated risk of bleeding

Risk Factors

Age > 65	Age > 75	Previous bleeding
Cancer	Metastatic Cancer	Renal failure
Liver failure	Thrombocytopenia	Prior stroke
Diabetes	Anemia	Antiplatelet therapy
Poor anticoagulant control	Recent surgery	Frequent falls
Alcohol abuse	NSAID use	
Comorbidity & reduced functional capacity		

Categorization of Risk of Bleeding

	Low	Moderate	High
0-3 months	1.6%	3.2%	12.8%
> 3 months	0.8%/yr	1.6%/yr	>6.5%/yr

CHEST Guideline, November 2015.

Rationale for Catheter Directed Therapy (CDT)

- Iliofemoral DVT have greater risk of PTS
- Large thrombus burden is associated with higher degree of obstruction and vessel wall and valvular injury
- Lysis requires clot penetration and increased surface area for plasminogen activation
- Plasminogen in circulation is easily inactivated by alpha 2 macroglobulin and antiplasmin
- Allows for direct thrombus action and decreased dose of agent needed

Catheter Directed Therapy

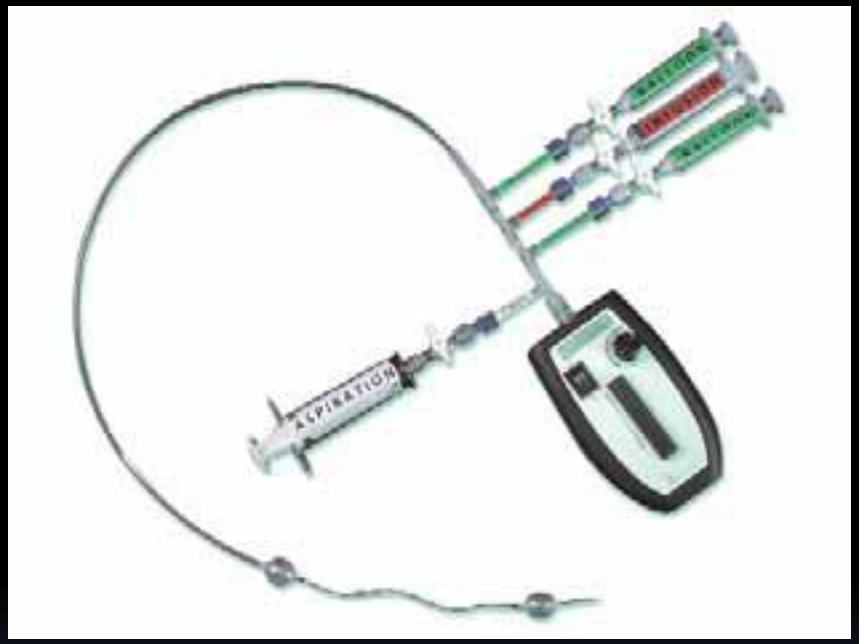
- National Venous Registry (Mewissen): 83% resulted in complete lysis of thrombus, and 90% patency and complete lysis at 1 year, with 5-10% bleeding risk
- Improvements in dosage and technique
- Adjunctive pharmaco-mechanical therapy

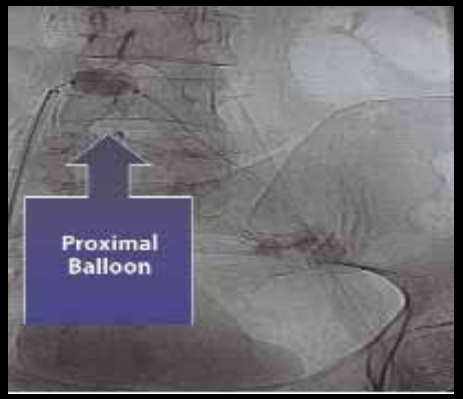
Pharmaco-mechanical Therapy (PMT)

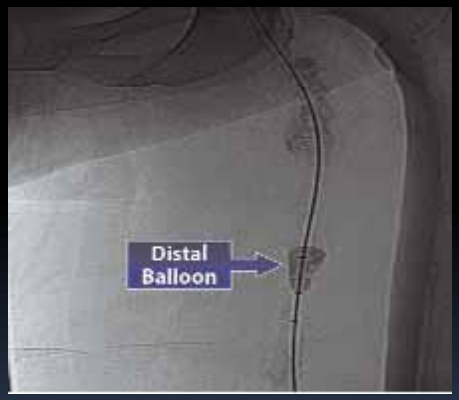
- Comerota (2000, 2009) : Improved QOL at 16 and 22 months with CDT/PMT for IFDVT
- Significant decrease in CEAP class at 12 months
- Low recurrence rate (9% at 35 months)
- Recurrence was related to degree of lysis

  (5% in those with <50% residual thrombus and 38% with > 50% residual thrombus)

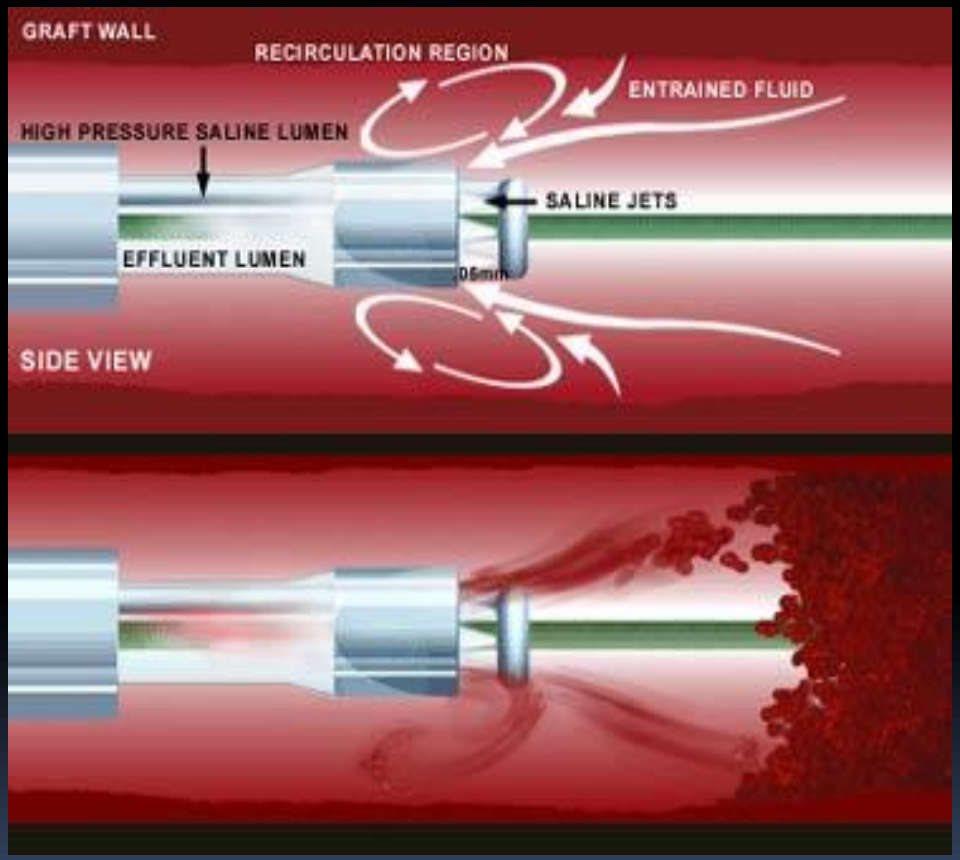
Catheter Directed Therapy with PMT



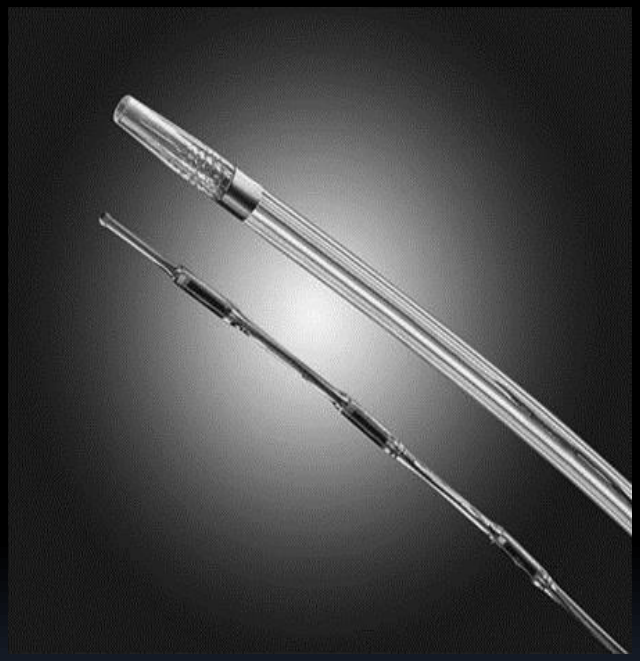


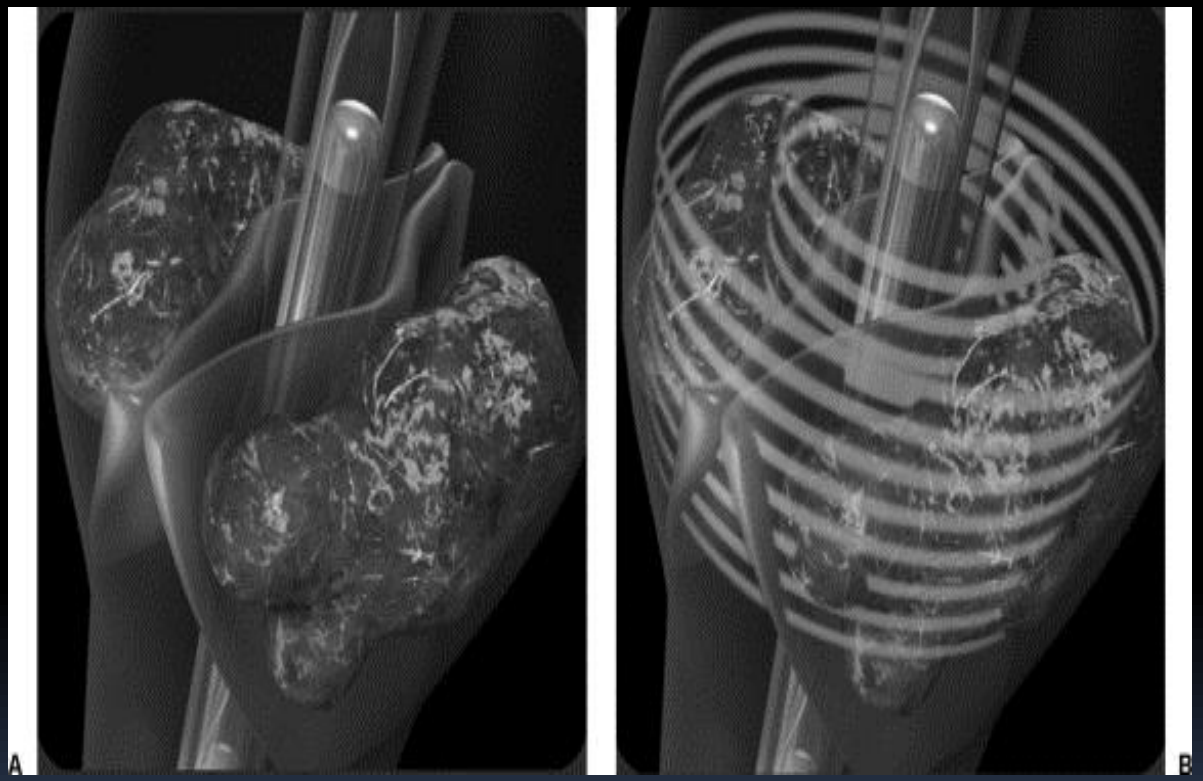


Catheter Directed Therapy with PMT



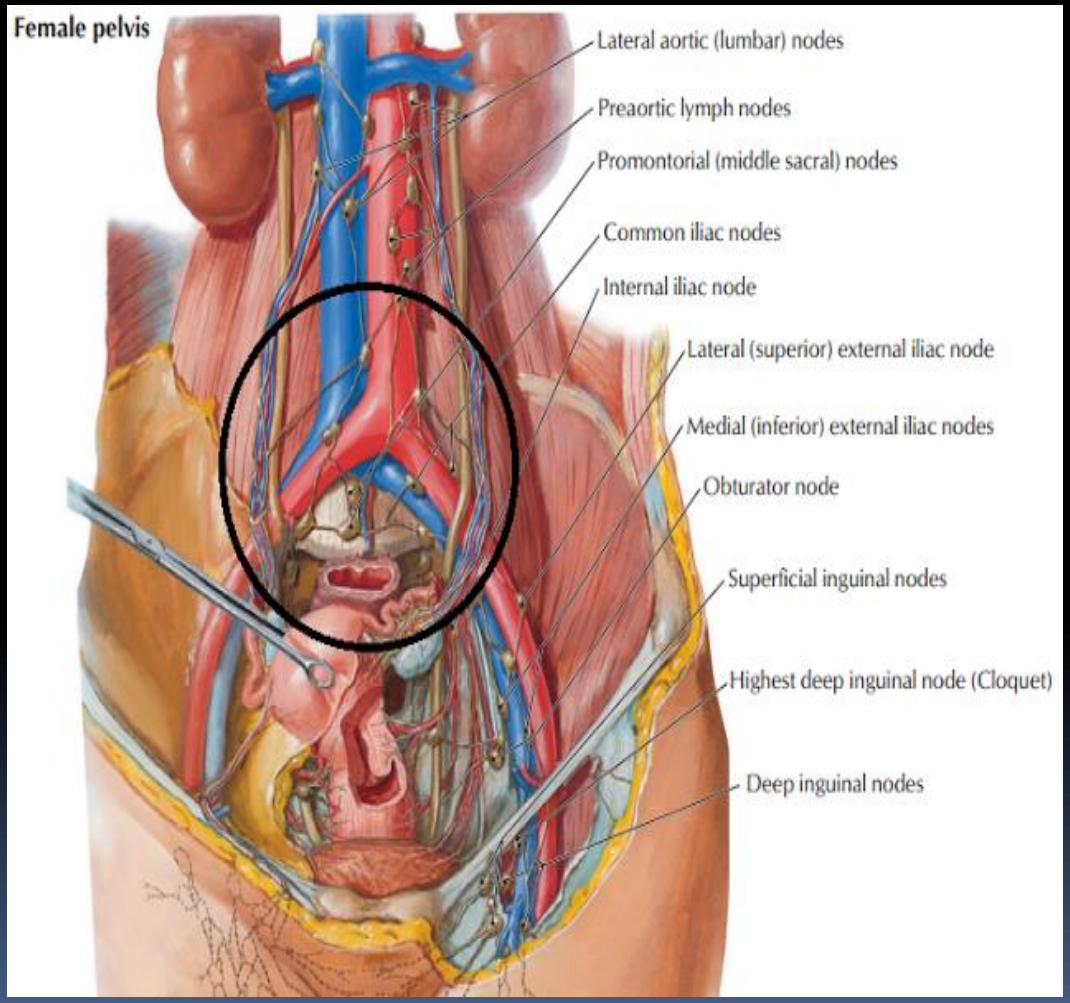
Catheter Directed Therapy with PMT

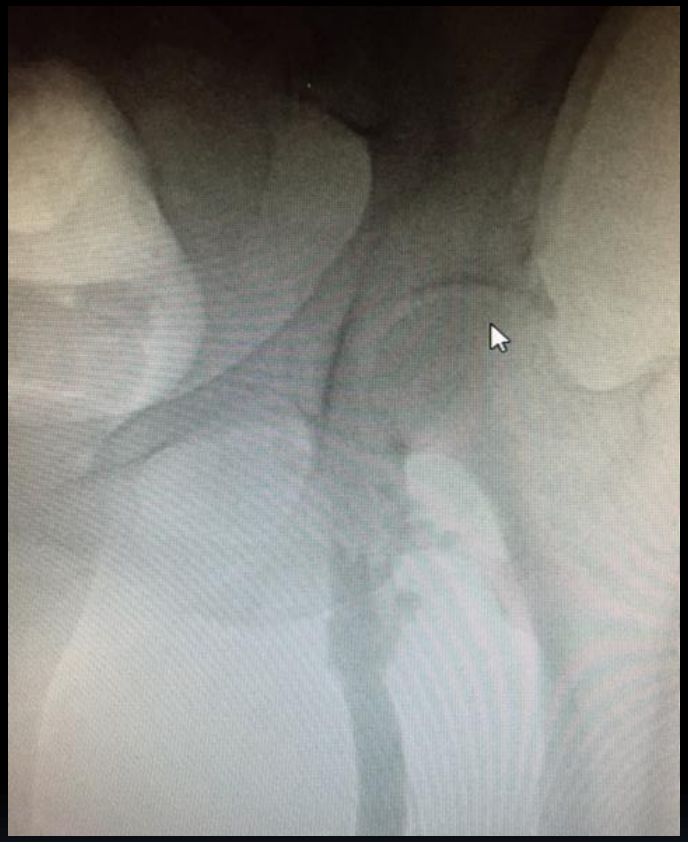


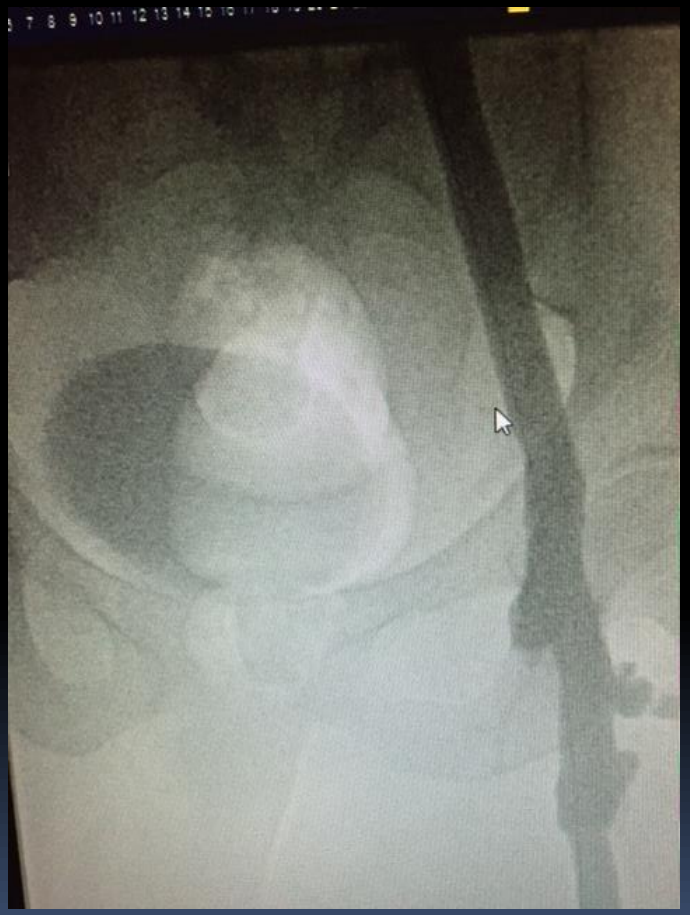


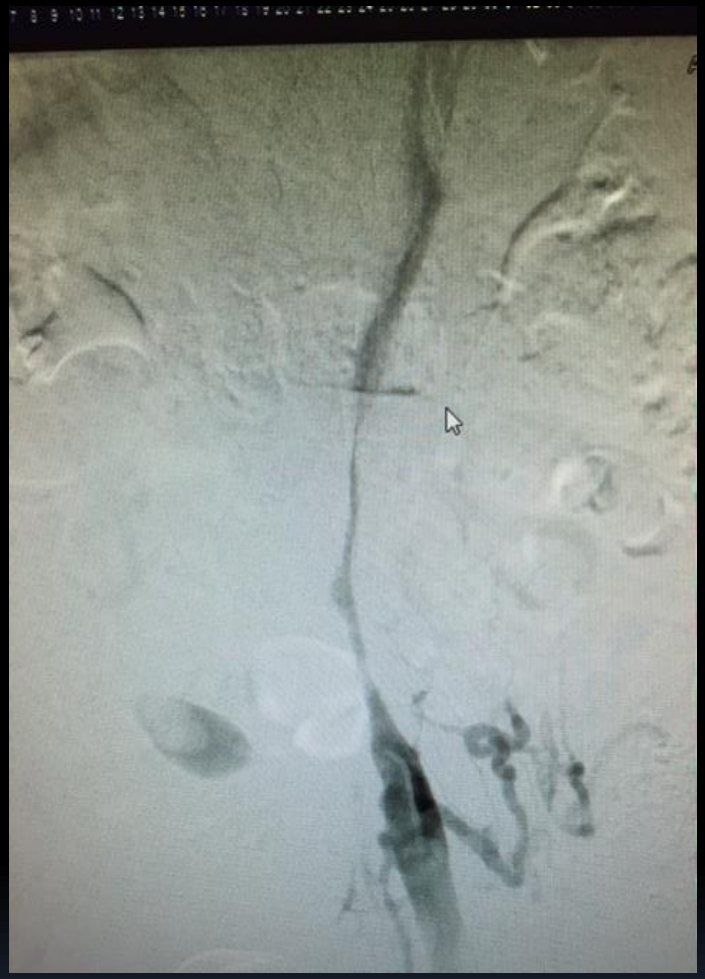
Venous Compression :May-Thurners Syndrome

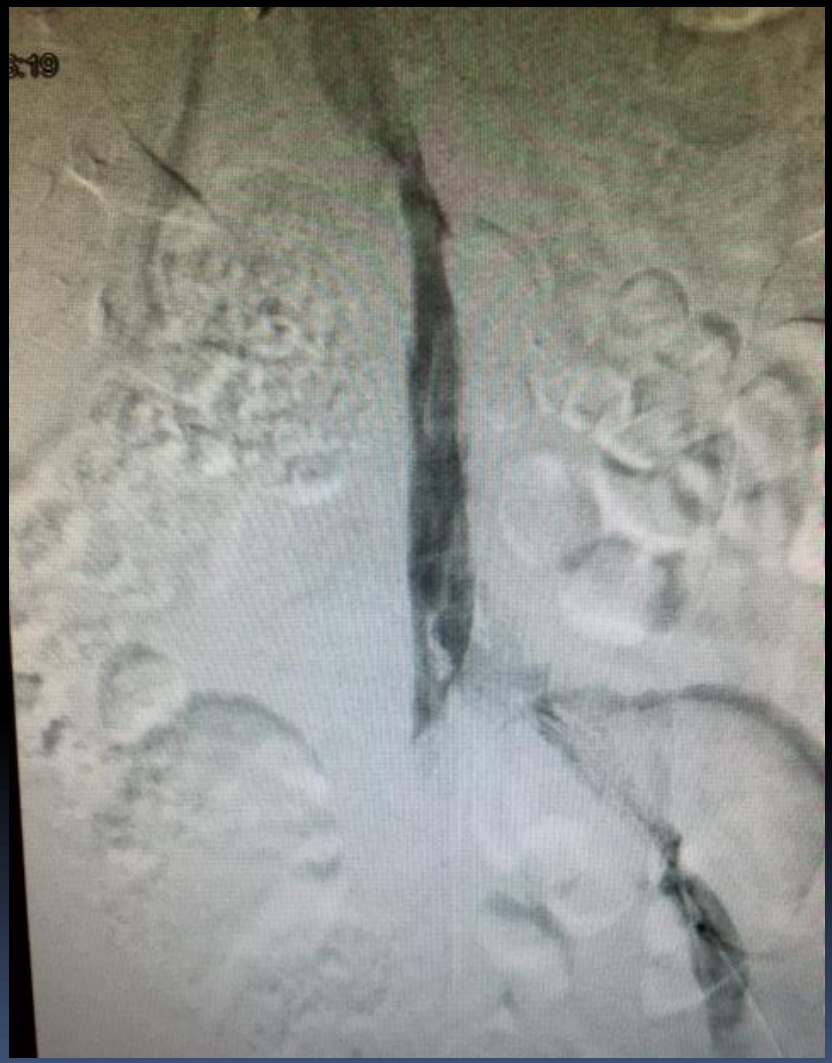
- Iliofemoral DVT resulting from anatomic compression of the left iliac vein by the overlying right common iliac artery
- 37-61% risk of edema or DVT

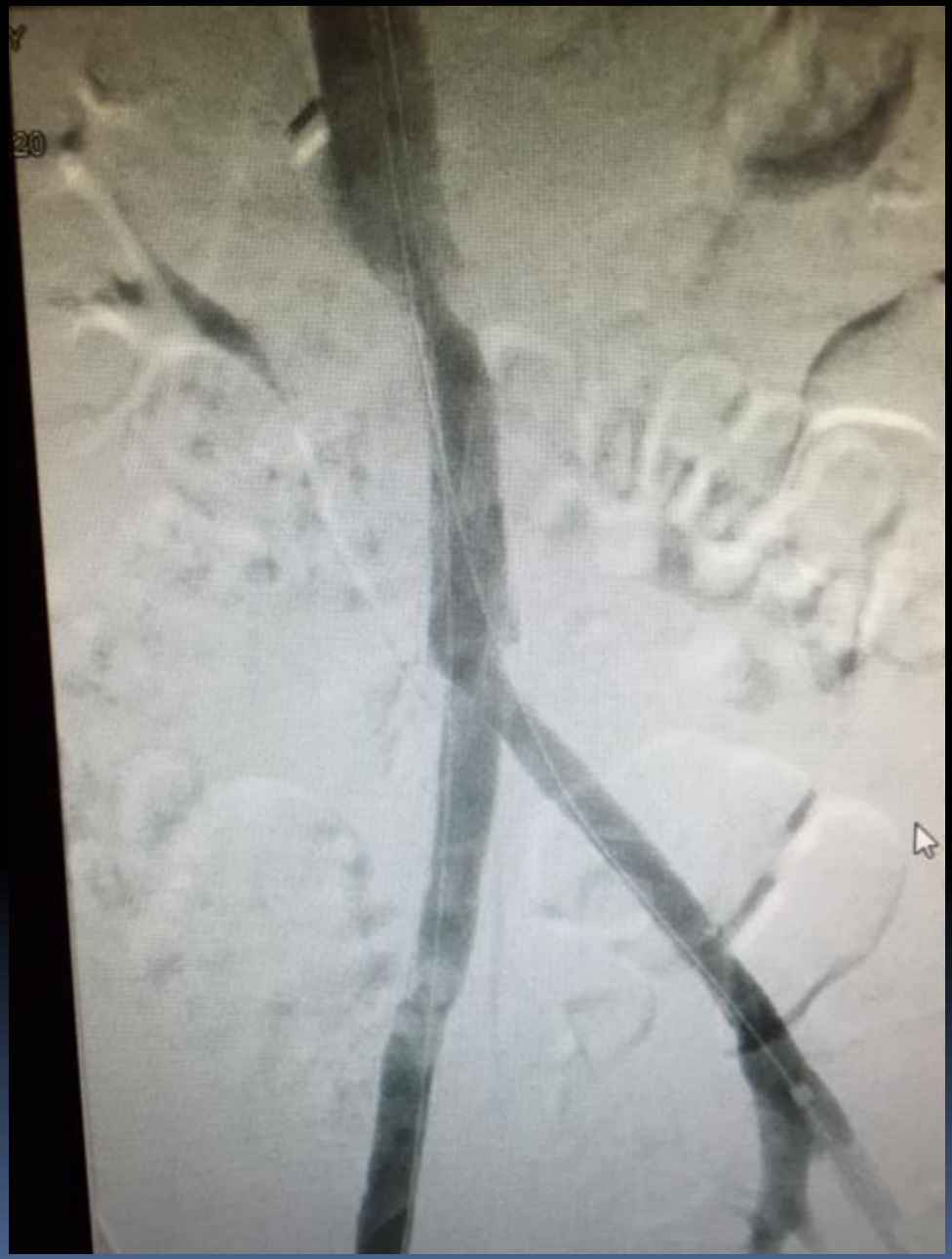








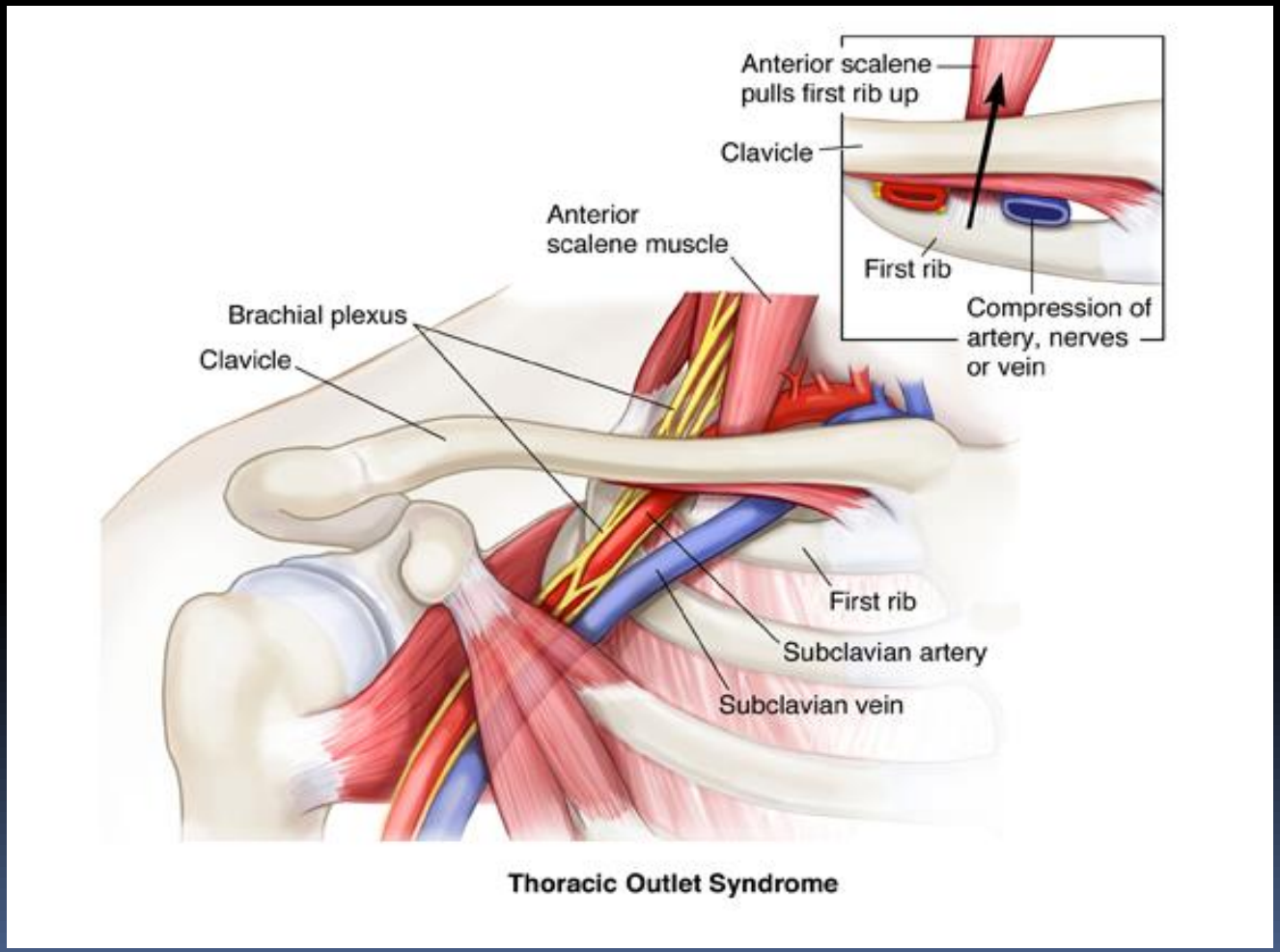


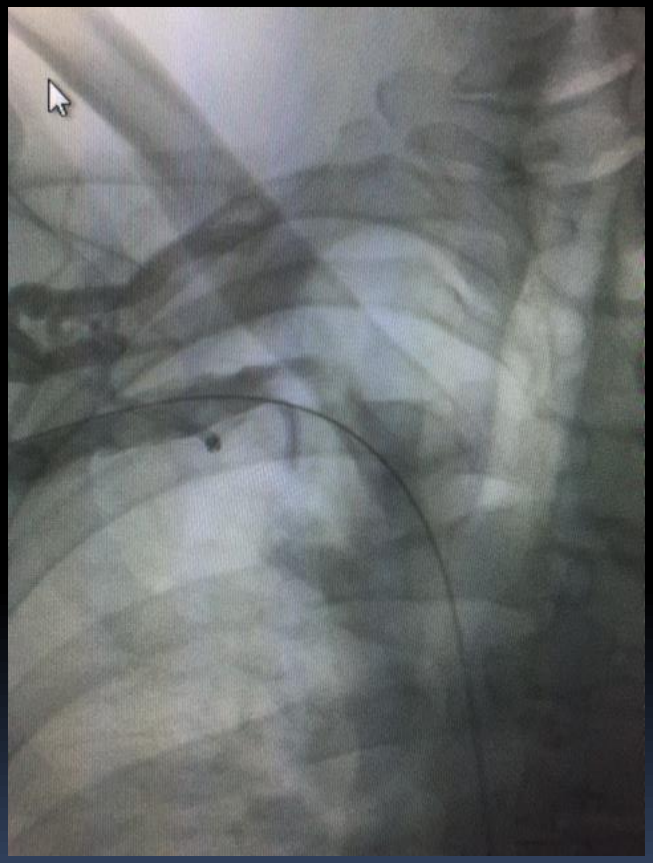


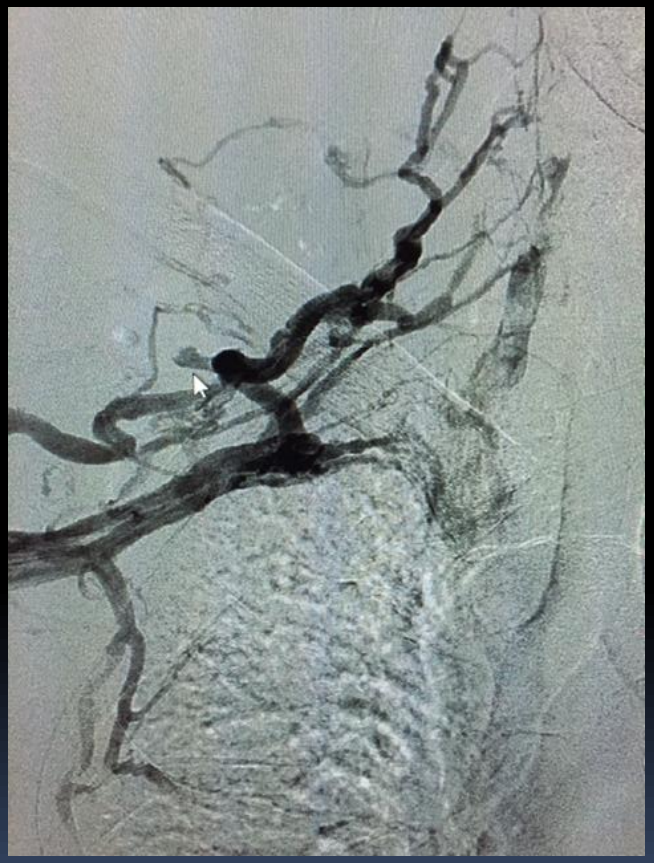
Upper Extremity DVT

- Accounts for 1-4% of all DVTs in the absence of central venous catheters
- CVCs increase incidence of DVTs by 2-16%
- 24% of UE DVTs are spontaneous and related to thoracic outlet compression, often in young healthy individuals
- PTS can occur in 7-46% of patients and is associated with increased functional disability and decreased QOL

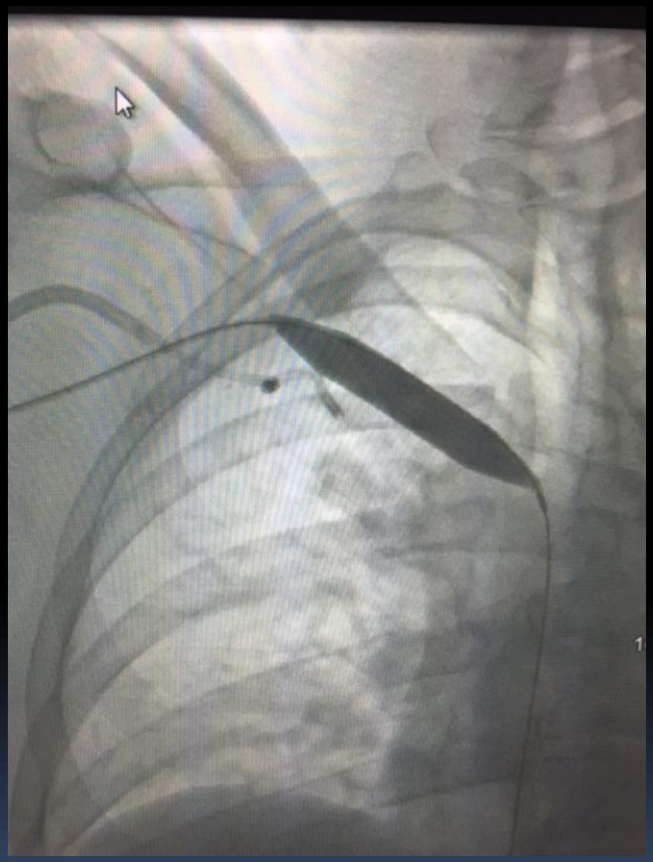
Axillo-subclavian DVT (Paget-Schroetter syndrome)

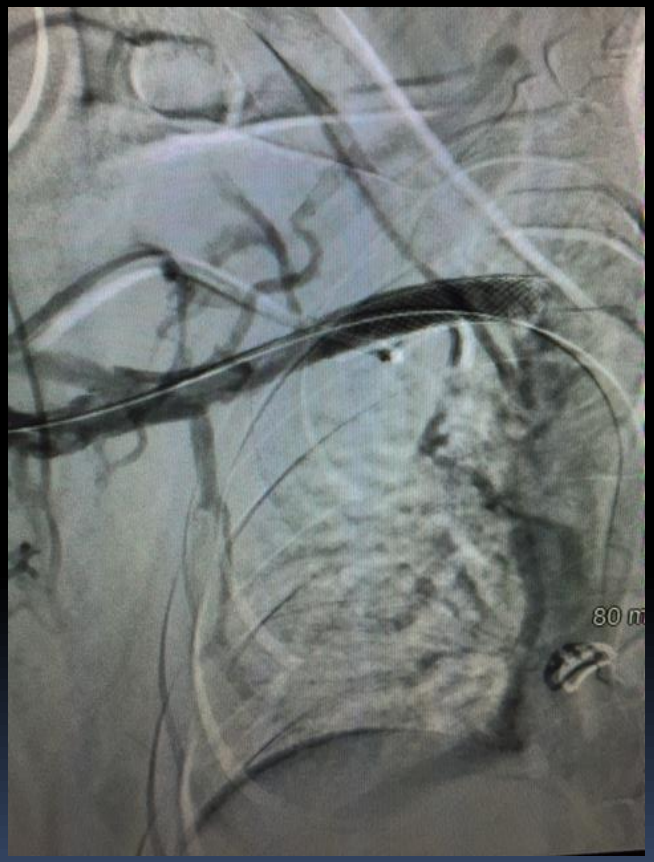




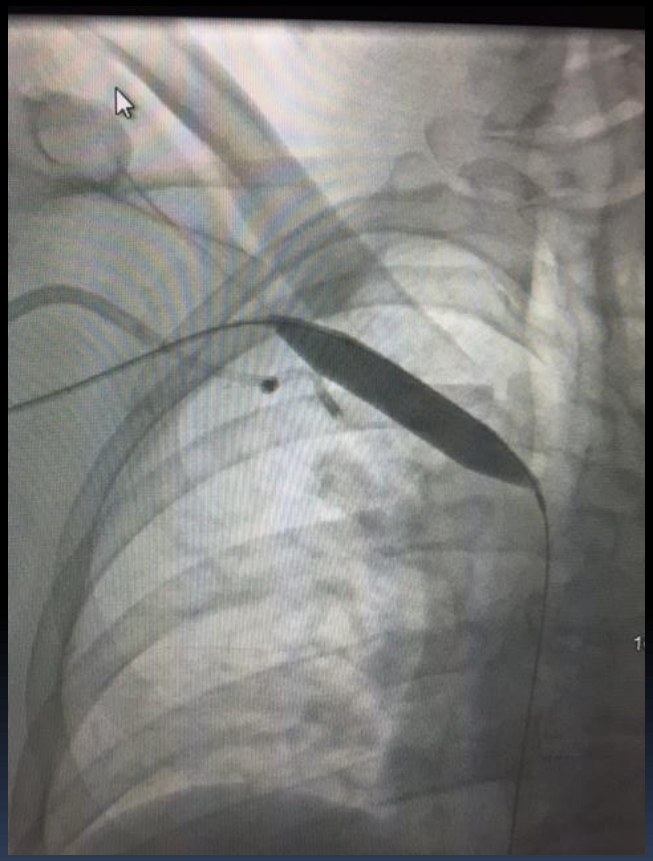


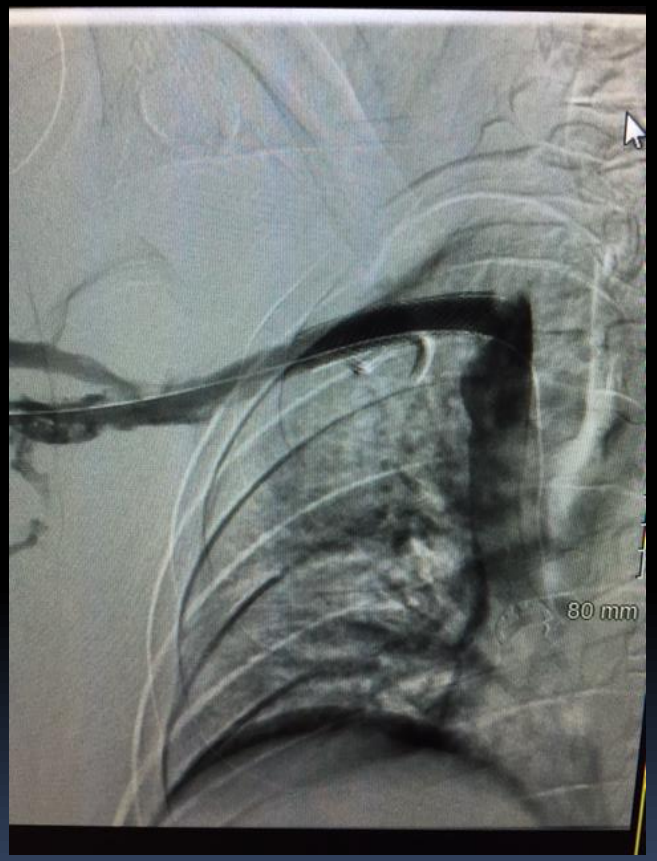
Management of Paget-Schroetters syndrome





Management of Paget-Schroetters syndrome

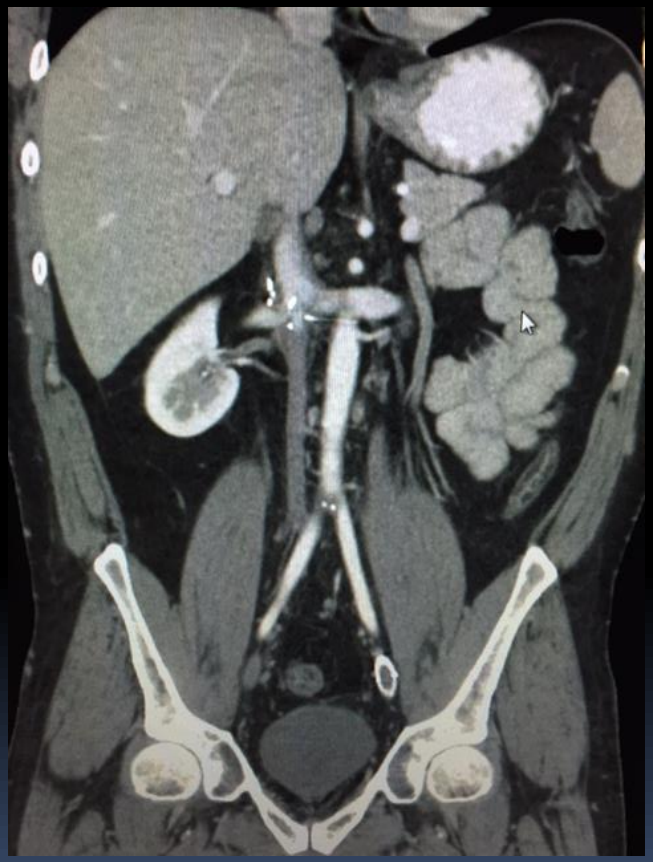


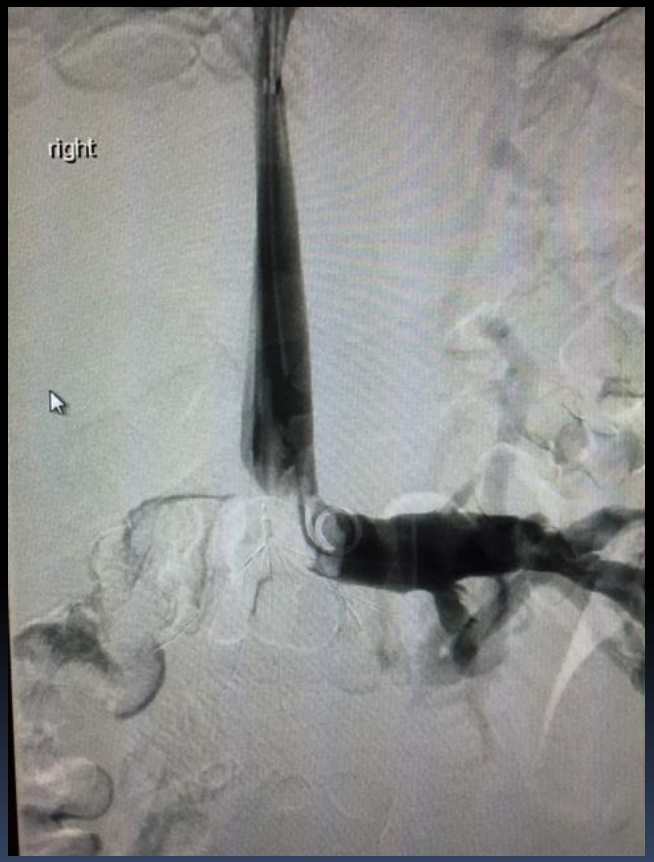


IVC Filter

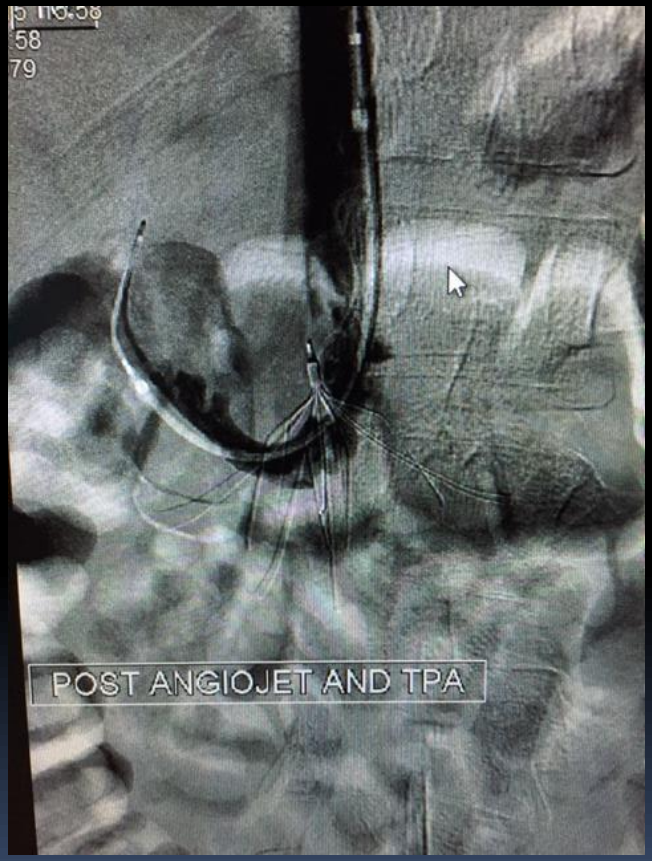
- Indicated for DVT/PE where there is a contraindication to anticoagulation
- Relative indications for failure of anticoagulation, or in cases of recurrent VTE in patients with severe cardiopulmonary compromise
- Trend towards limited/ highly selective use of IVC filters

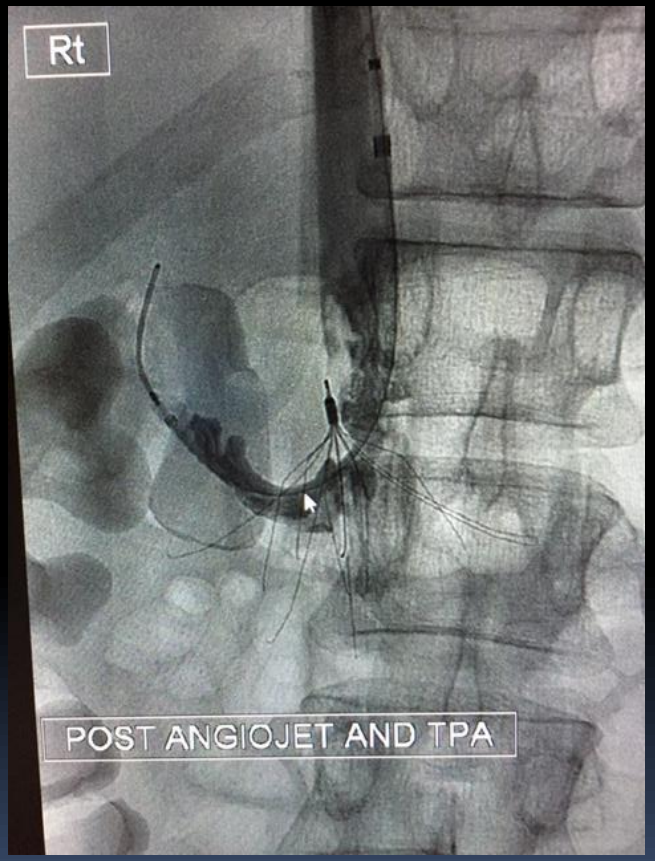
IVC and renal vein thrombosis





IVC and Renal vein thrombosis





Surgical Thrombectomy

- Indicated when catheter based techniques and lytic therapy have failed or are contraindicated in the setting of impending venous gangrene and limb loss
- Adjunctive arterio-venous fistula and fasciotomy as indicated

The Acute Venous Thrombosis: Thrombus Removal With Adjunctive Catheter-Directed Thrombolysis (**ATTRACT**) **study**

- NIH Sponsored Phase III trial, 692 patients, comparing standard anticoagulant therapy with PCDT for proximal (above the popliteal DVT)
- Hypothesis is that PCDT decreases incidence of PTS at 2 years by at least 1/3

Other Venous stent trials

- VIRTUS Trial for the VENITI VICI Venous stent system
- Zilver Vena VIVO Study
- GORE VIABAHN Endoprosthesis with Heparin bioactive surface to treat venous occlusions

  (outside of the iliofemoral veins)

  Angiovac, Indigo Thrombectomy

Conclusions

- Understanding of venous anatomy and physiology is essential for treatment
- Appropriate clinical diagnosis based on presentation, clinical probability and confirmatory testing
- Anticoagulation remains the mainstay of therapy

- CHEST Guidelines:
  - 3 month duration of anticoagulation with preference for NOACs over VKA
  - Extended (no stop date) anticoagulation for unprovoked VTE in patients without high risk for bleeding
  - LMWH preferred for cancer-related thrombosis
  - Need for regular re-assessment of risks of anticoagulation : INDIVIDUALIZED

Conclusion

- Catheter directed therapy has a role in selected individuals with extensive proximal DVT (iliofemoral and axillo-subclavian DVT)
- When used selectively, adjunctive therapies have been shown to improve outcomes and QOL

- Increased awareness of PCP and Hospitalists with what we can offer
- Mutlidisciplinary approach
- Should we adopt a liberal endovascular approach to VTE?
- Experience with Central venous/Caval occlusion and newer generation devices?


Thank You

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Kamal Gupta, MD

SVS Society for Vascular Surgery | m2s | Society for Vascular Medicine

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Harold Hsu, MD

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The Effect of Abdominal Aortic Aneurysm Size on Type II Endoleak and Sac Regression following Endovascular Stent Graft Repair

Harold Hsu MD, Paul Dunlavy DO, Jan Franko MD, PhD, David Chew MD

Mercy Medical Center, Des Moines, IA

Mercy

Background

- EVAR is the preferred mode of treatment for most patients
- Studies have shown that large AAA (≥6 cm) have a higher rate of rupture and aneurysm related death following EVAR as compared to small AAA
- Unclear if large AAA remodel in a similar fashion to small AAA in the absence of any endoleak

Objectives

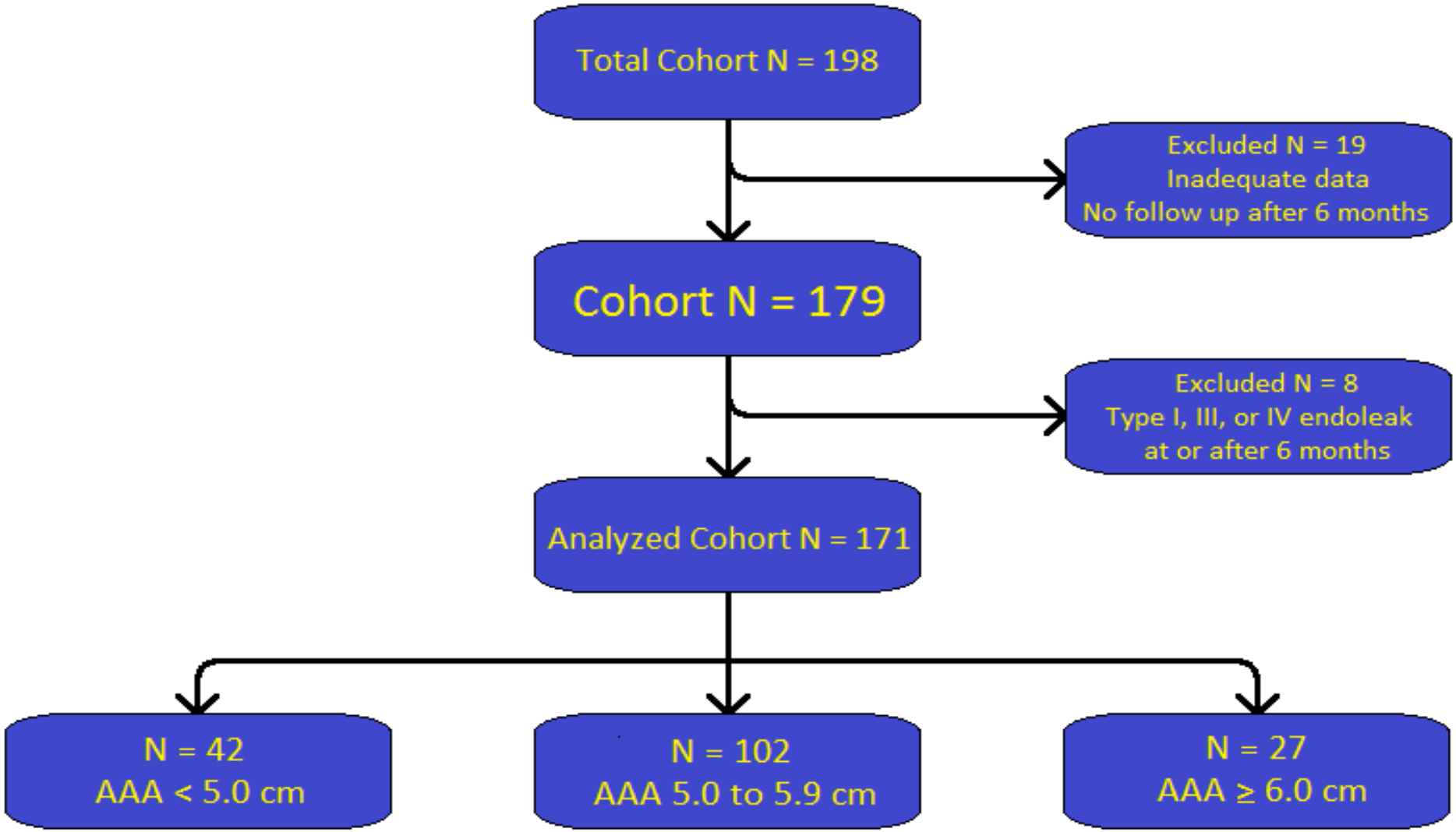
1. Examine the rate of late type II endoleak among small, medium, and large AAA

2. Examine the rate of sac diameter regression among small, medium and large AAA in the absence of any endoleak

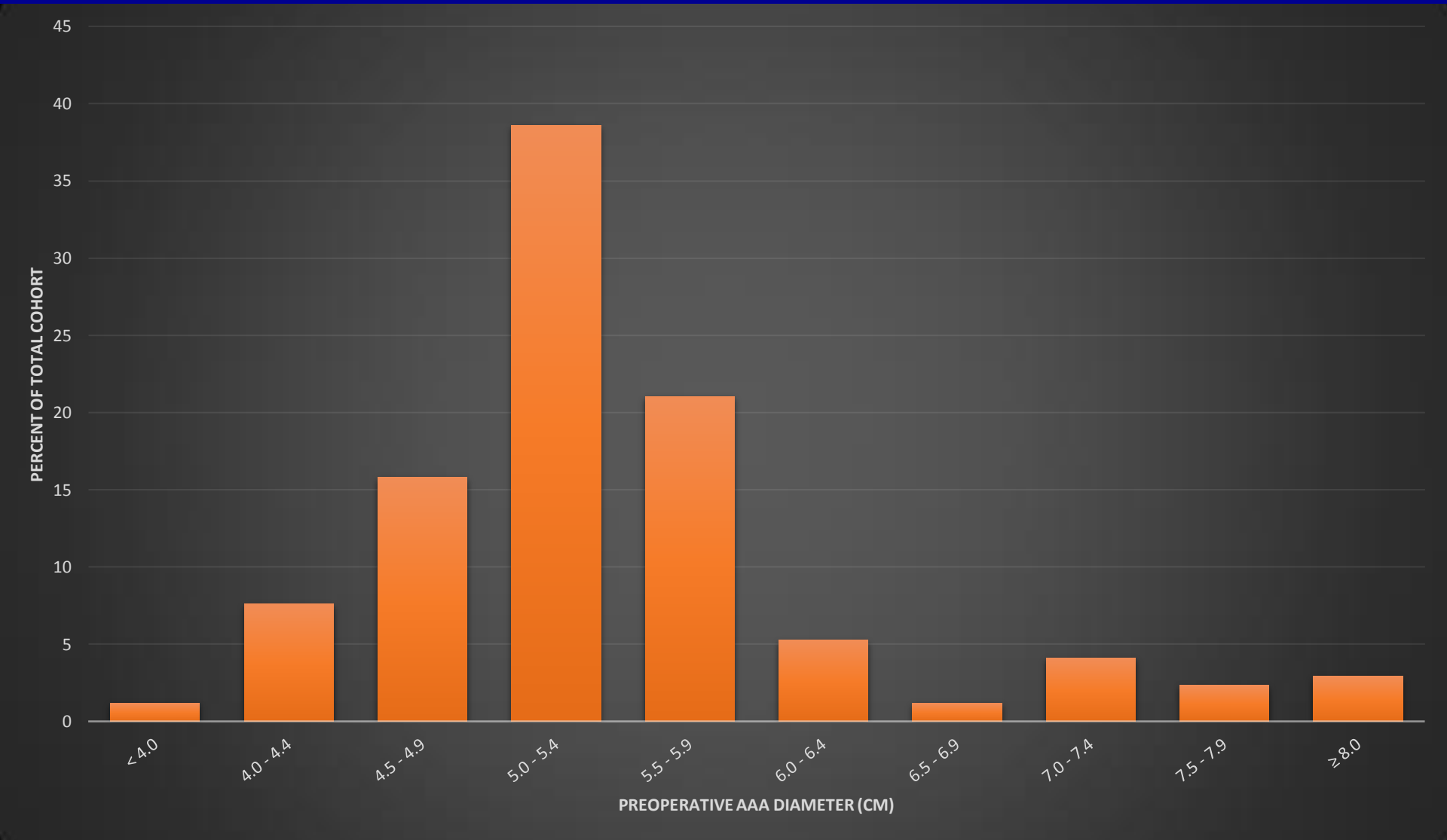
Methods

- A retrospective analysis was performed on all non-ruptured AAA treated by elective EVAR using FDA-approved endografts in our facility from January 2005 to December 2008
- Patients with type I, III, and IV endoleaks at completion of EVAR were excluded. Analysis was restricted to patients with ≥ 6 months follow-up
- Late type II endoleak was defined as one present at 6 months or later
- Initial AAA size was determined by preoperative CT. Sac regression was calculated from the latest CT or US on follow-up.

Study Cohort



Distribution of AAA Diameter



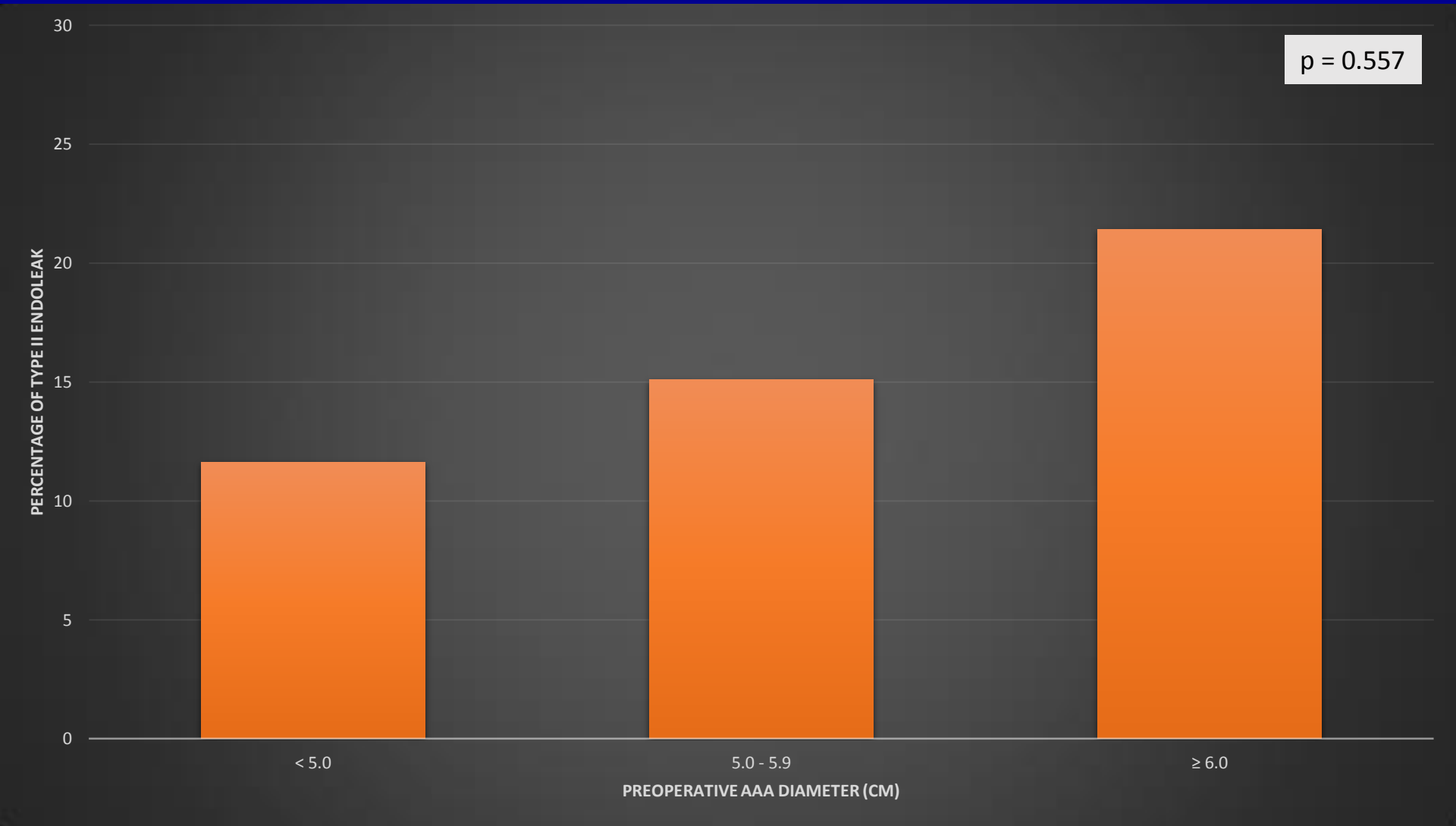
Study Group Characteristics

	< 5.0 cm	5.0 – 5.9 cm	≥ 6.0 cm	P
Age (mean years)	74.3	74.5	74.4	0.88
Female **Male**	14 (47%) 30 (20%)	12 (40%) 95 (63%)	4 (13.3%) 25 (17%)	**0.01**
CAD	14 (32%)	37 (35%)	10 (34%)	0.98
CHF	12 (27%)	26 (24%)	6 (21%)	0.81
CRI	16 (36%)	31 (29%)	4 (14%)	0.11
CVA	8 (18%)	17 (16%)	2 (7%)	0.41
COPD	20 (45%)	38 (36%)	8 (28%)	0.29

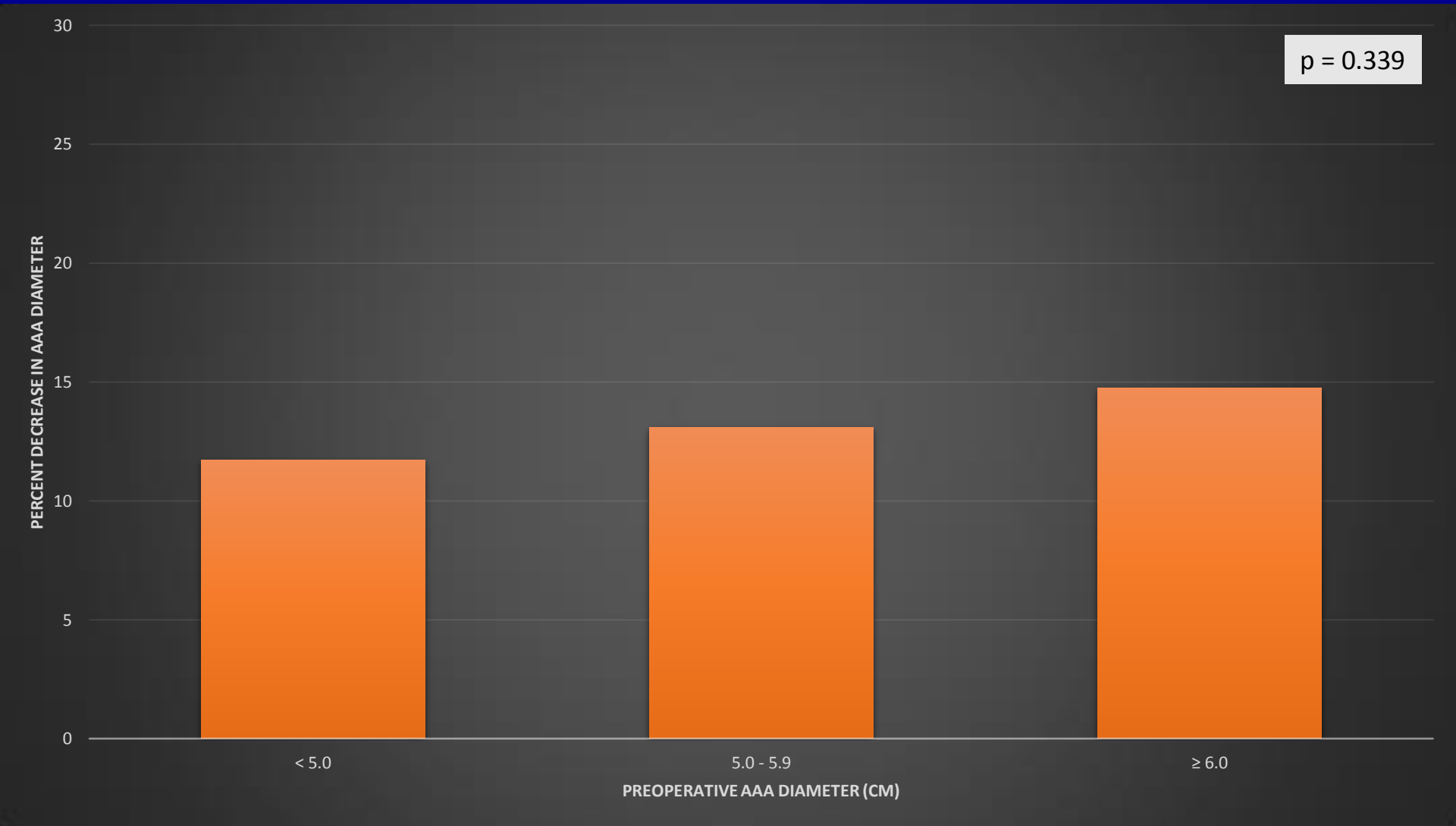
Adverse Events after EVAR

	< 5.0 cm	5.0 – 5.9 cm	≥ 6.0 cm
Type IA EL	1	2	2
Type IB EL	0	1	0
Type II EL	3	12	3
Type III EL	0	1	0
Type IV EL	0	0	0
Type V EL	1	0	0
Graft stenosis	0	1	1
Graft occlusion	0	1	0
Graft infection	0	1	0
Renal artery stenosis	0	1	0

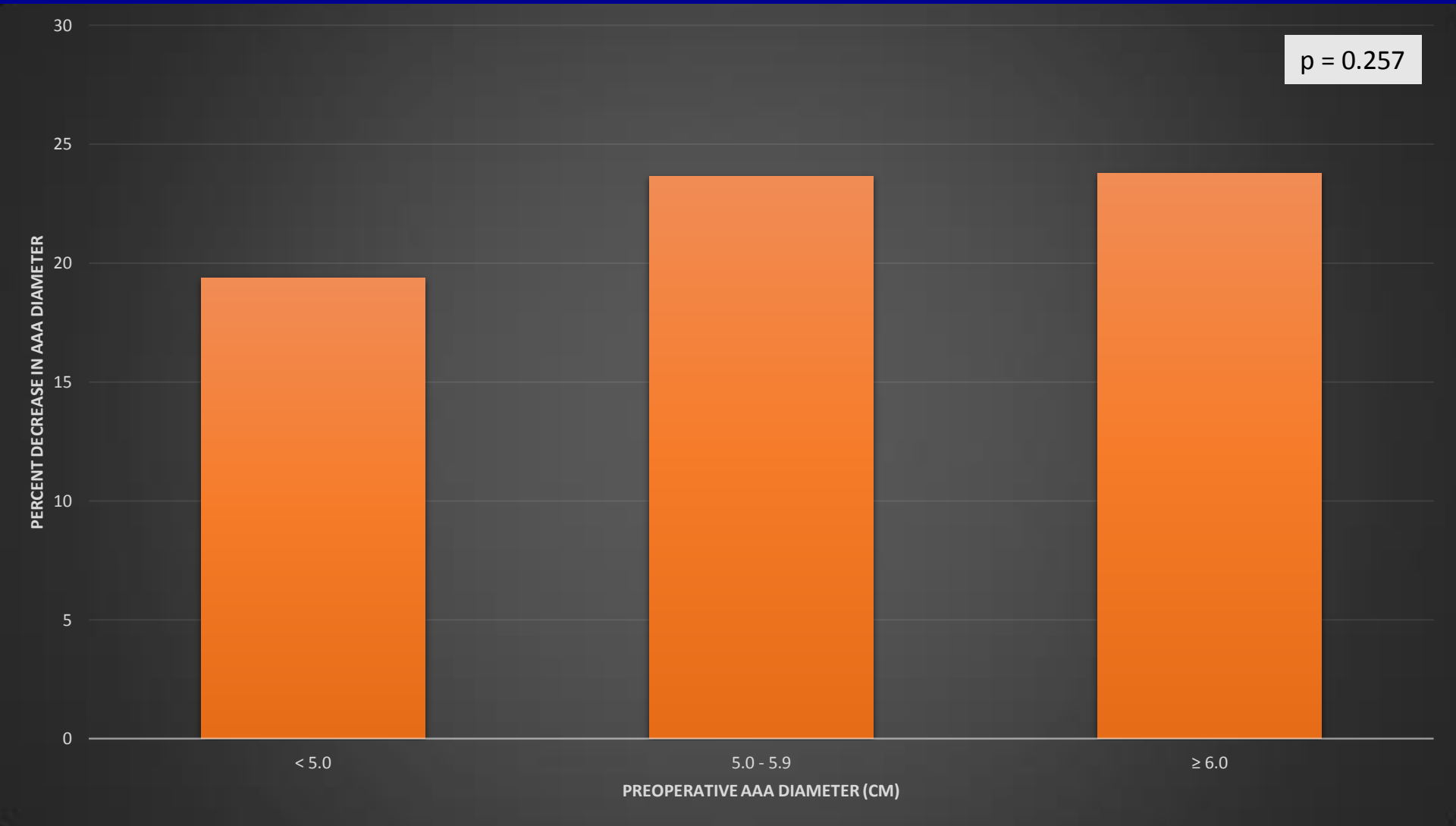
Rate of Late Type II Endoleaks



AAA Diameter Change by CT



AAA Diameter Change by US/CT



Conclusion

- The rate of late type II endoleak is not associated with the preoperative size of the AAA
- In the absence of any endoleak, a large aneurysm will regress at the same rate as a small or medium aneurysm
- Further studies are needed to identify causes of inferior results of EVAR as reported by others among patients with large AAA

Recommendation

- Based on our data, large AAA size alone should not preclude patients with suitable anatomy for EVAR therapy

Data Managers Report

- Cynthia Bik, RN-CES

Funding for Regional Meetings

- Industry SVS Grant
- Dues
- Rotate hospitals and host hospital funds
- Regional Vascular Society

Round Table

Vascular Quality Initiative®

Expanding Participation: Iowa, Nebraska Illinois, Missouri

ALLEN HOSPITAL		IA
GENESIS MEDICAL CENTER-DAVENPORT		IA
MERCY MEDICAL CENTER-DUBUQUE		IA
MERCY MEDICAL CENTER-SIOUX CITY		IA
ST LUKES HOSPITAL		IA
UNIVERSITY OF IOWA HOSPITAL & CLINICS		IA
THE NEBRASKA MEDICAL CENTER		NE
THE NEBRASKA METHODIST HOSPITAL		NE

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ADVOCATE LUTHERAN GENERAL HOSPITAL	IL
ADVOCATE TRINITY HOSPITAL	IL
ALEXIAN BROTHERS MEDICAL CENTER	IL
CENTEGRA HEALTH SYSTEM - MC HENRY HOSPITAL	IL
DECATUR MEMORIAL HOSPITAL	IL
EDWARD HOSPITAL	IL
ELMHURST MEMORIAL HOSPITAL	IL
EVANSTON HOSPITAL	IL
FRANCISCAN ST JAMES HEALTH	IL
GOOD SAMARITAN REGIONAL HLTH CENTER	IL
INGALLS MEMORIAL HOSPITAL	IL
LITTLE COMPANY OF MARY HOSPITAL	IL
LOYOLA UNIVERSITY MEDICAL CENTER	IL
MACNEAL HOSPITAL	IL
MEMORIAL HOSPITAL	IL
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MERCY HOSPITAL AND MEDICAL CENTER	IL
NORTHWEST COMMUNITY HOSPITAL	IL
PALOS COMMUNITY HOSPITAL	IL
PRESENCE RESURRECTION MEDICAL CENTER	IL
RIVERSIDE MEDICAL CENTER	IL
RUSH UNIVERSITY MEDICAL CENTER	IL
SHERMAN HOSPITAL	IL
SILVER CROSS HOSPITAL AND MEDICAL CENTERS	IL
ST ALEXIUS MEDICAL CENTER	IL
ST JOHNS HOSPITAL	IL
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POPLAR BLUFF REGIONAL MEDICAL CENTER	MO
RESEARCH MEDICAL CENTER	MO
SAINT FRANCIS MEDICAL CENTER	MO
SOUTHEAST MISSOURI HOSPITAL	MO
ST LUKES HOSPITAL OF KANSAS CITY	MO

Future Meetings

Next meeting:
Sept 7, 2016 Columbus, OH (to coincide with MVSS) 10am-4pm
Place – TBD

- Spring 2017 – KUMC – Kansas City, Kansas Date – TBD
- Fall 2017 – Conjunction with MVSS
- Spring 2018 – Peoria has offered to host. Marlene Hunteman to discuss.

Adjourn