Virginia Cardiac Services Quality Initiative

Spring 2025

Quarterly Meeting

Sponsored by:

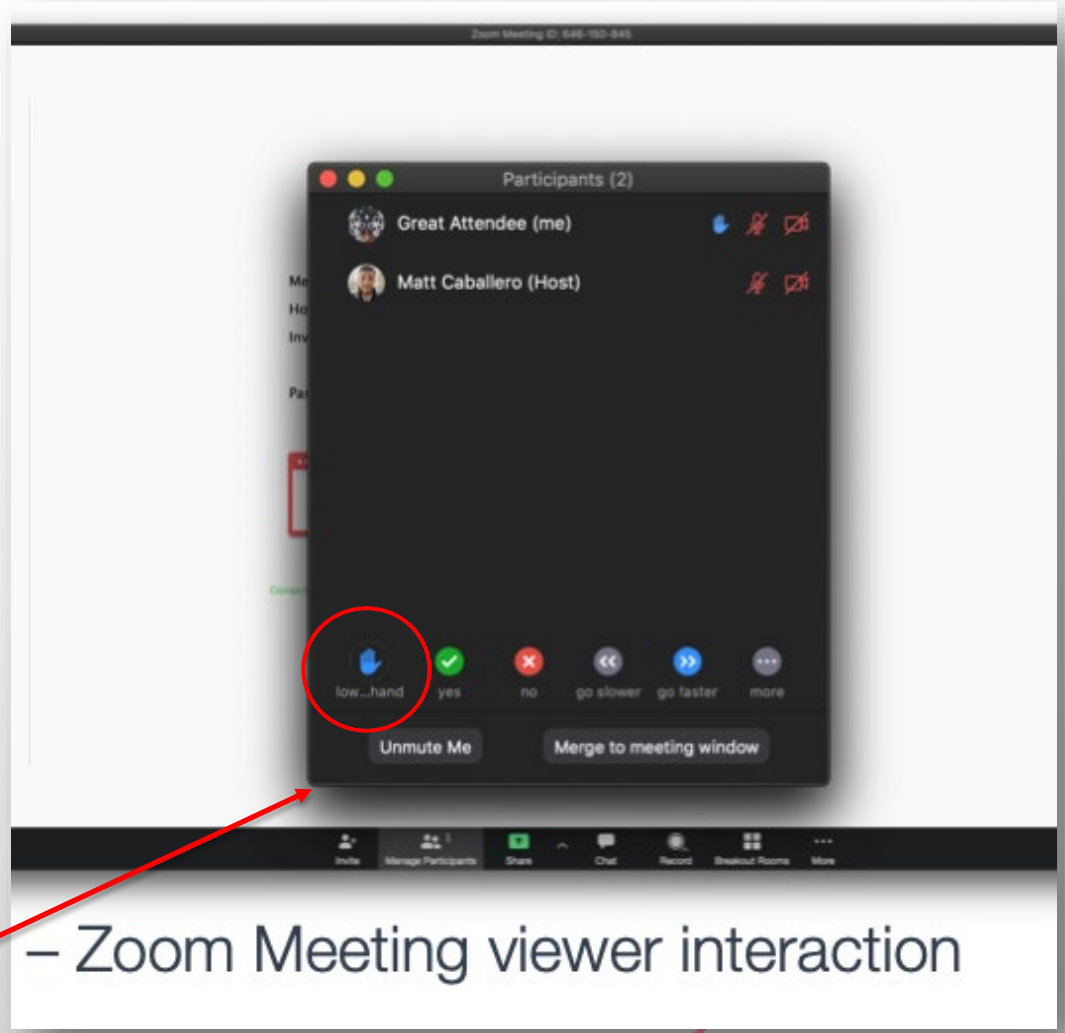
Spectrum Medical

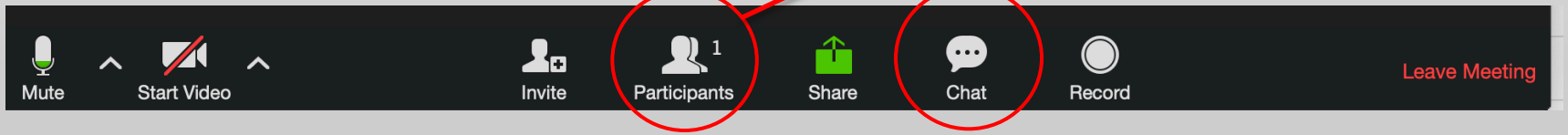
Transforming Cardiovascular Care to Improve Patient Experience and Value

VCSQI

To ensure a smooth meeting...

- Please mute your lines (phone or audio), until called upon
  - Interactive features available under **'participants'** window
- Hold questions until end of presentation
- Use "Raise Hand" feature for questions or comments
- The Chat Room can also be used to ask questions
- **Call/text Sherri (216) 513-3141** if you need assistance





New CME Opportunities Available

- Medicine- AMA PRA Category 1
- Nursing- ANCC Contact Hours
- Physician Assistant - AAPA
- IPCE Performance Improvement
- ABMS Maintenance of Certification - MOC II- ABIM

How to Claim Credit

1. Go to www.cmevillage.com.
2. Click on the “Learning Portal” button and select “CE Certificate”.
3. **Sign in with your email and password or create an account if you are a new user.**
4. Enter CE Activity Code **27607** and click “Submit” and “Continue”.
5. Complete the evaluation and click “Done”.
6. Certificate Preparation; indicate number of credits you wish to claim for attending this activity. Click “Submit”
7. Click “Print Certificate” or you can access later by visiting our website, Click “Learning Portal”, Sign in at the top of the page and click “Credit History & Past Certificate”.

For problems, contact the CME office at uvacme@virginia.edu

PLEASE NOTE: The post activity evaluation will only be available for a 30-day period. Credit will not be issued after the evaluation period has closed.

Welcome and Highlights from the Board
Robert Lancey, MD (Sentara Norfolk)

Awards & Recognition
Sherri White and Eddie Fonner, VCSQI

Cost and Quality Data Review
Eddie Fonner; VCSQI Executive Director

VCSQI Workgroup & Committee Spotlight
Quality Committee
Judy Smith, RN; University of Virginia
Perfusion Workgroup
Eve Dallas, CCP; University of Virginia

2025 Quality Initiatives
Sherri White, MSPOD; VCSQI Quality Improvement Advisor

This meeting is sponsored by:

Spectrum Medical

VCSQI

Honoring our Past Chair

Mohammed Quader, MD

Virginia Commonwealth University

2023-2024


VCSQI
Mohammed Quader, M.D.
For Your Visionary Leadership & Dedication
to improving The Health of Virginia

Rise of our new Chair

Robert Lancey, MD

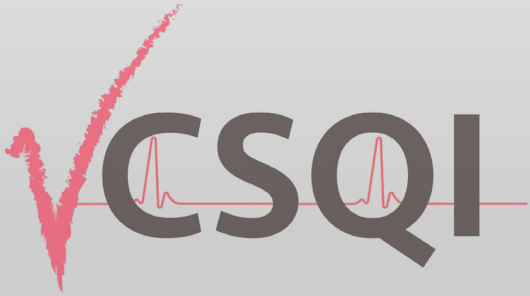
Sentara Rockingham

2025-2026

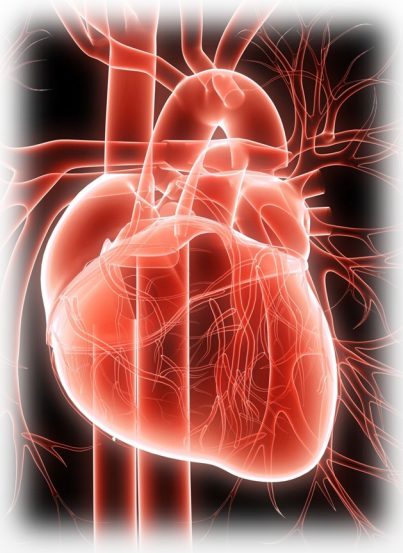
Welcome and Highlights from the Board

Robert Lancey, MD (Sentara Rockingham)
VCSQI Chairman

Thank you to our sponsor:



VCSQI Strategic Plan



Mission

Transform Cardiovascular Care to Improve Patient Experience and Value

Vision

Optimize Heart Care Outcomes Through National Collaboration, Innovation and Research

Core Values

Value-Based Best Practices

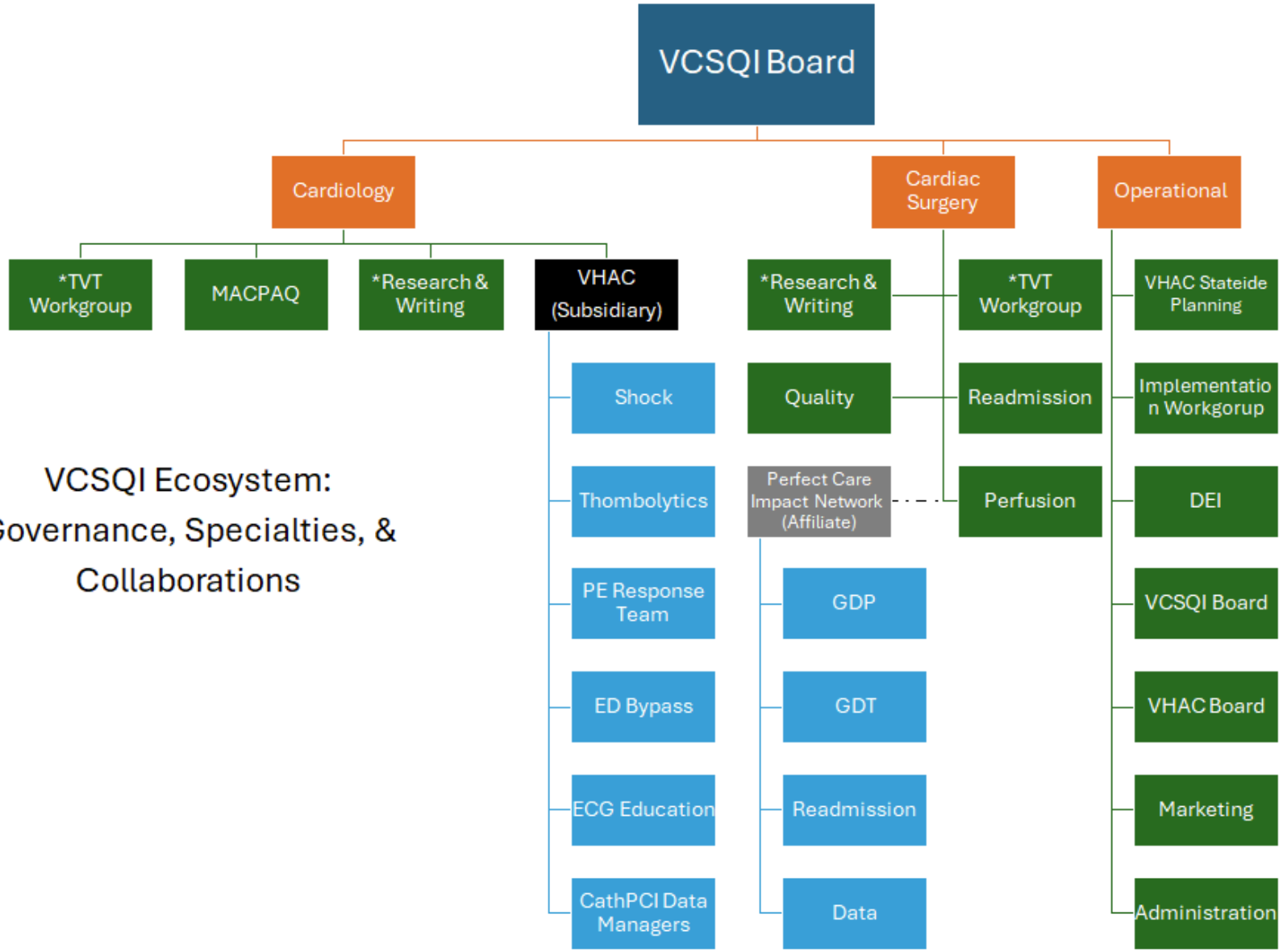
Collabration & Transparency

Stewardship of Healthcare & Costs

Quality and Patient Centered

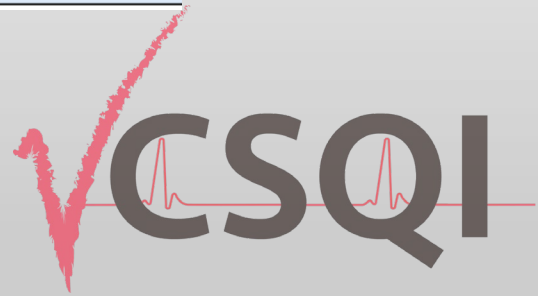
Innovation; Data and Analytic-Driven

VCSQI Ecosystem: Governance, Specialties, & Collaborations



*Committee/Workgroup that touches multiple specialties.

			Champion/Chair			
Sponsoring Organization	Committee/Workgroup	Status	Name	Facility	State	Meeting Frequency
VHAC	Cardiogenic Shock	Active	Chalak Berzingir, MD	Carilion	Virginia	Monthly
VHAC	Thombolytics	Active	Michael Kontos, MD	VCU	Virginia	PRN
VHAC	ECG Education	Active	Bob Page	EMS Educator	Virginia	Monthly
VHAC	ED Bypass & False Activation	Active	Peter O'Brien, MD Michael Kontos, MD	Centra Lynchburg VCU	Virginia	PRN
VHAC	PE Response Team	Active	Michael Kelley, MD	Carilion	Virginia	Monthly
VHAC	VHAC Board	In Development	Peter O'Brien, MD Michael Kontos, MD	Centra Lynchburg VCU	Virginia	Quarterly
VHAC	Statewide Planning Committee	Active	Peter O'Brien, MD Michael Kontos, MD	Centra Lynchburg VCU	Virginia	Monthly
VCSQI	Quality Committee	Active	Judy Smith, RN	UVA	Virginia	Monthly
VCSQI	Research & Writing Committee	Active	TBD		Virginia	PRN
VCSQI	Cardiology Data Managers Committee	Active	TBD		Virginia	PRN
VCSQI	DEI 2.0 Committee	Active	Halima Walker. RN	Riverside	Virginia	PRN
VCSQI	Acute Kidney Injury (AKI) Workgroup	Protocol Adoption Phase	Mike Brown, CCP	Mary Washington	Virginia	TBD
VCSQI	Readmissions Workgroup	Protocol Adoption Phase	Robert Lancey, MD	Sentara Rockingham	Virginia	PRN
VCSQI	Perfusion Workgroup	Active	Eve Dallas, CCP	UVA	Virginia, Maryland, and North Carolina	Monthly
VCSQI	TVT Workgroup	In Development	John Saxon, MD	UVA	Virginia	Monthly
VCSQI	Implementation Committee	Active	Mike Brown, CCP	Mary Washington	Virginia	Monthly
VCSQI	VCSQI Board	Active	Robert Lancey, MD	Sentara Rockingham	Virginia	Monthly
Perfect Care Impact Network	Data Management	Active	Eddie Fonner	VCSQI	Virginia, Maryland, and North Carolina	Bi-Monthly
Perfect Care Impact Network	Goal-Directed Therapies	Active	Amanda Rea, DNP	University of Maryland	Virginia, Maryland, and North Carolina	Quarterly
Perfect Care Impact Network	Goal-Directed Perfusion	Active	Eve Dallas, CCP	UVA	Virginia, Maryland, and North Carolina	PRN
Perfect Care Impact Network	Readmissions	Active	Shannon Crotwell, RN	Atrium Health	Virginia, Maryland, and North Carolina	Monthly



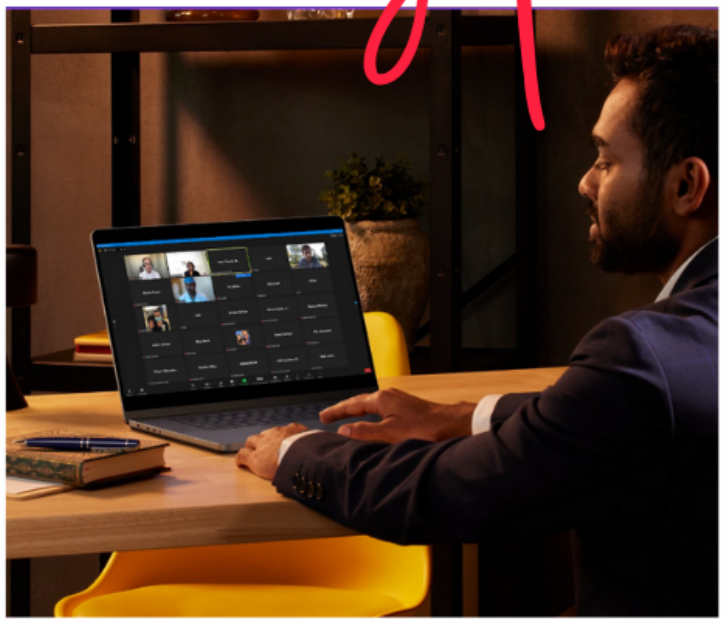
Board Updates: 2024 Highlights

- Readmission Calculator
- DEI 2.0 Workgroup
  - Hosted two watch parties of “Everybody’s Work”
  - First Annual Patient Panel – Winter Quarterly Meeting
- New Metrics:
  - OR Efficiency (Mohammed Quadar, MD)
- New Board member: Dr. Brody Wehman
- Published Studies: 15+ peer-reviewed articles

- New Workgroups: ECG education, ED Bypass, Thrombolytics, PE Response Team (PERT) and Cardiogenic Shock.
- STEMI Registry Growth: 28 centers participating, tracking time-to-treatment and survival rates.
- Rebranding: New mission, logo, website, and outreach to reinforce focus on equitable care.

NOW Available

VCSQI.ORG
VAHEARTATTACKCOALITION.ORG



VCSQI

VHAC
Virginia Heart Attack Coalition

2022-2024 Annual Report

We're excited to share that the Virginia Cardiac Services Quality Initiative (VCSQI) 2022-2024 Annual Report is now available! This report highlights our collective achievements, data-driven insights, and the continued impact of collaboration in improving cardiac care.

Board Updates: Spring 2025

- New Board Member: Dr. Leora Yarboro (UVA)

- 2025 Strategic Planning
  - Measurement of Collaboration and Quality Improvement
  - Identification and Targeting of New Facilities for Growth
  - New Funding Opportunities

2025 BALANCED SCORECARD

Transforming Cardiovascular Care to Improve Patient Experience and Value

QUALITY / DATA MANAGEMENT

Objectives: Enhance data utilization and value for member programs.

- **Develop model of quality metrics linked to cost savings**
  1. Develop quality metrics / cost savings model
  2. Demonstrate model at quarterly meeting, seek participants
- **Formalize clinical protocol development**
  1. Identify and develop one new clinical protocol each year
  2. Compile all protocols into VCSQI Quality Handbook
  3. Track protocol adherence and update protocols as needed

FINANCIAL SUSTAINABILITY AND GROWTH

Objectives: Ensure financial sustainability to support the mission.

- **Revenue enhancement through member organizations**
  1. Evaluate potential new member organizations
  2. Develop and publish Annual Report
- **Develop and advance additional revenue streams**
  1. Identify potential sponsors for quarterly meetings
  2. Develop sponsorship tiers of support
  3. Explore grant funding and philanthropic partnerships

SWORKFORCE AND MEMBER ENGAGEMENT

Objectives: Deliver value and strengthen relationships with stakeholders and employees.

- **Enhance workplace environment**
  1. Develop employee bonus compensation plan linked to strategic goals
  2. Provide opportunities for employee growth and learning
- **Continue building value for engaged member programs**
  1. Onboard new member programs
  2. Work with member organizations to improve quality of services
  3. Conduct annual survey of member program satisfaction
- **Assess Board of Directors membership and satisfaction**
  1. Annual Board of Directors survey for members
  2. Develop succession plans annually

RESEARCH & EDUCATION

Objectives: Increase research visibility, protocol adoption, and academic contributions.

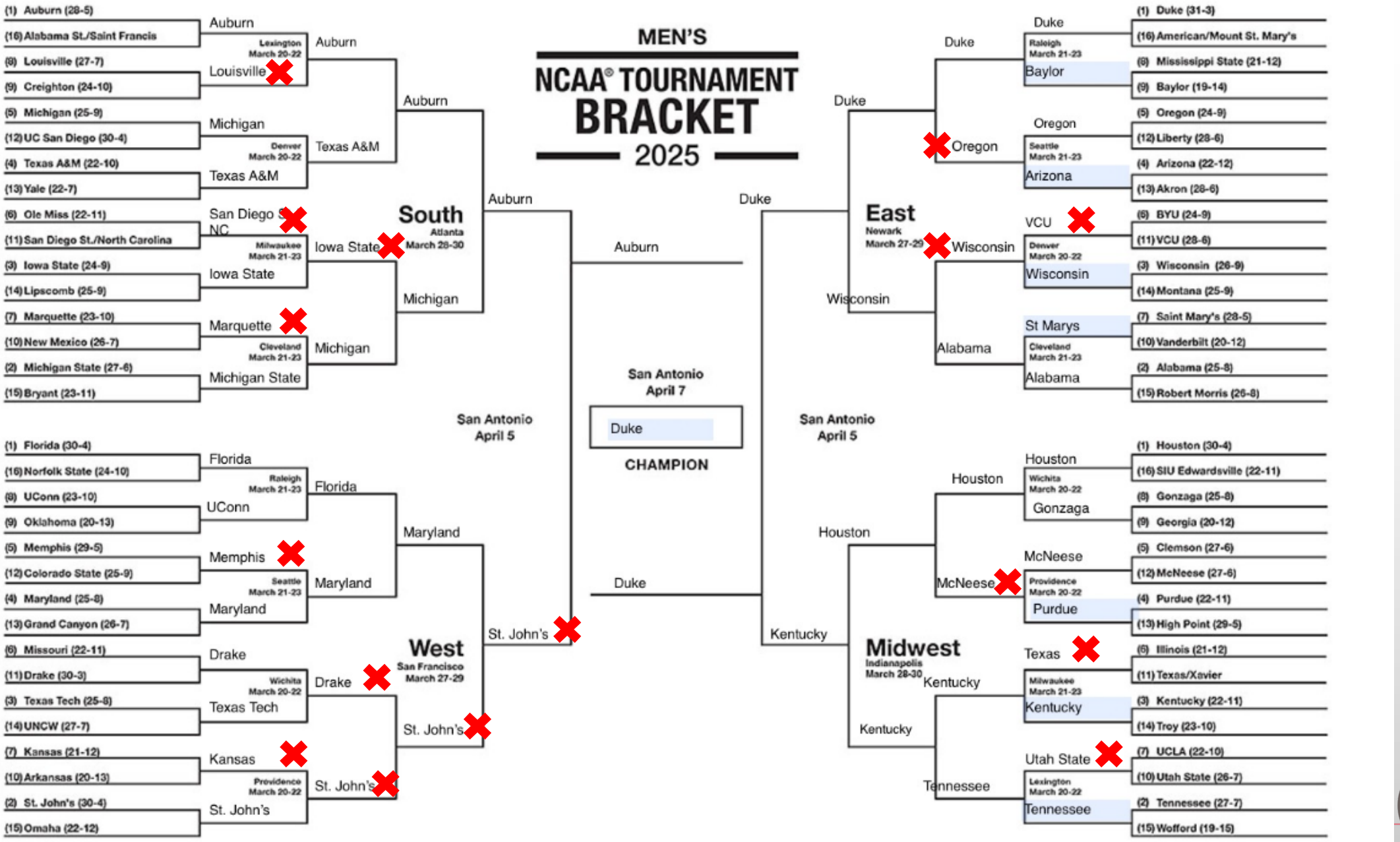
- **Highlight projects, papers, presentations**
  1. Annual presentation to Board / quarterly meeting on status
  2. Consider and develop annual award(s) for best in class
- **Maximize membership adoption of protocols**
  1. Survey members on protocol compliance ('why' and 'why not')
  2. Track and present data on measurable benefits of protocol adoption
- **Assess the value of new internships through UVA**
  1. Develop assessment tools for interns to complete
  2. Have interns present to the Board / quarterly meetings
  3. Define Internship learning objectives to maximize impact

VCSQI

Your input helps shape the future of VCSQI!

Member Satisfaction Survey

Now Open


MEN'S
NCAA® TOURNAMENT
BRACKET
2025
South
Atlanta
March 28-30
East
Newark
March 27-29
West
San Francisco
March 27-29
Midwest
Indianapolis
March 28-30
San Antonio
April 5
San Antonio
April 5
San Antonio
April 7
CHAMPION
Duke
(1) Auburn (28-5)
(16) Alabama St./Saint Francis
(8) Louisville (27-7)
(9) Creighton (24-10)
(5) Michigan (25-9)
(12) UC San Diego (30-4)
(4) Texas A&M (22-10)
(13) Yale (22-7)
(6) Ole Miss (22-11)
(11) San Diego St./North Carolina
(3) Iowa State (24-9)
(14) Lipscomb (25-9)
(7) Marquette (23-10)
(10) New Mexico (26-7)
(2) Michigan State (27-6)
(15) Bryant (23-11)
(1) Florida (30-4)
(16) Norfolk State (24-10)
(8) UConn (23-10)
(9) Oklahoma (20-13)
(5) Memphis (29-5)
(12) Colorado State (25-9)
(4) Maryland (25-8)
(13) Grand Canyon (26-7)
(6) Missouri (22-11)
(11) Drake (30-3)
(3) Texas Tech (25-8)
(14) UNCW (27-7)
(7) Kansas (21-12)
(10) Arkansas (20-13)
(2) St. John's (30-4)
(15) Omaha (22-12)
(1) Duke (31-3)
(16) American/Mount St. Mary's
(8) Mississippi State (21-12)
(9) Baylor (19-14)
(5) Oregon (24-9)
(12) Liberty (28-6)
(4) Arizona (22-12)
(13) Akron (28-6)
(6) BYU (24-9)
(11) VCU (28-6)
(3) Wisconsin (26-9)
(14) Montana (25-9)
(7) Saint Mary's (28-5)
(10) Vanderbilt (20-12)
(2) Alabama (25-8)
(15) Robert Morris (26-8)
(1) Houston (30-4)
(16) SIU Edwardsville (22-11)
(8) Gonzaga (25-8)
(9) Georgia (20-12)
(5) Clemson (27-6)
(12) McNeese (27-6)
(4) Purdue (22-11)
(13) High Point (29-5)
(6) Illinois (21-12)
(11) Texas/Xavier
(3) Kentucky (22-11)
(14) Troy (23-10)
(7) UCLA (22-10)
(10) Utah State (26-7)
(2) Tennessee (27-7)
(15) Wofford (19-15)

Welcome and Highlights from the Board
Robert Lancey, MD (Sentara Norfolk)

Awards & Recognition
Sherri White and Eddie Fonner, VCSQI

Cost and Quality Data Review
Eddie Fonner; VCSQI Executive Director

VCSQI Workgroup & Committee Spotlight
Quality Committee
Judy Smith, RN; University of Virginia
Perfusion Workgroup
Eve Dallas, CCP; University of Virginia

2025 Quality Initiatives
Sherri White, MSPOD; VCSQI Quality Improvement Advisor

This meeting is sponsored by:

Spectrum Medical

VCSQI

Awards & Recognition

Sherri White and Eddie Fonner, VCSQI

Improving heart care quality, patient experience and costs

VCSQI

The Nominees

Improving heart care quality, patient experience and costs

Cat Moore, BSN, RN (UVA)

Cat has played a pivotal role in driving the success of our LifeNet ECG transmissions, demonstrating exceptional leadership and expertise from kickoff through development.

"Cat has been phenomenal in our kickoff and development of LifeNet ECG transmissions."

NOMINATOR(S):

Megan Vaughan, MSN, RN

VCSQI

Dana Millner, MSN, RN, CCRN

Dana has demonstrated outstanding leadership in quality improvement, interdisciplinary collaboration, and patient-centered innovation. Her initiatives—reducing extubation times, minimizing unnecessary lab draws and x-rays, and pioneering VA ECMO mobilization—have significantly improved patient outcomes and set new standards of excellence at VCU and within VCSQI.

"Dana doesn't just lead—she empowers those around her to strive for excellence. Her passion for quality improvement has created lasting change that benefits both patients and the entire healthcare team."

NOMINATOR(S):

Mohammed Quader, MD (VCU)

VCSQI

Eve Dallas, CCP (UVA)

Eve has done an amazing job at unifying the Virginia perfusion community to standardize quality perfusion care and align these efforts with the VCSQI collaborative to improve patient outcomes. As a board member, Eve continues to challenge VCSQI to strive for improvement, innovation, integration and collaboration for all members.

"Eve is an amazing person, perfusionist and leader.

She is the epitome of what VCSQI represents."

NOMINATOR(S):
Mike Brown, CCP (Mary Washington)

VCSQI

Megan Vaughan, MSN, RN (Bon Secours)

Megan exemplifies excellence in cardiac care through her unwavering dedication to improving outcomes and her commitment to collaboration. She consistently demonstrates a proactive approach by sharing innovative ideas, processes, and protocols with peers and committee members.

"Megan Vaughn is truly an outstanding leader, collaborator, and advocate for excellence in cardiac care. She is a driving force for positive change, and her contributions are deeply deserving of recognition."

"Megan strives to collaborate with multiple areas in the organization to provide accurate, up to date, data."

NOMINATOR(S):

Cat Moore (UVA), Sally Burnam (Bon Secours Mercy Health) Peter O'Brien, MD (Centra)

VCSQI

Peter O'Brien, MD (Centra)

Peter O'Brien exemplifies exceptional leadership, collaboration, and dedication to improving patient care. His unwavering commitment to teamwork and continuous learning has significantly advanced quality initiatives, positively impacting both colleagues and the broader Richmond community

"…I have learned so much from each of you, and I want you to know—from the bottom of my heart—what a tremendous and positive impact VCSQI and VHAC have made on our Richmond community…"

NOMINATOR(S):

Megan Vaughan (Bon Secours)

VCSQI

Improving heart care quality, patient experience and costs

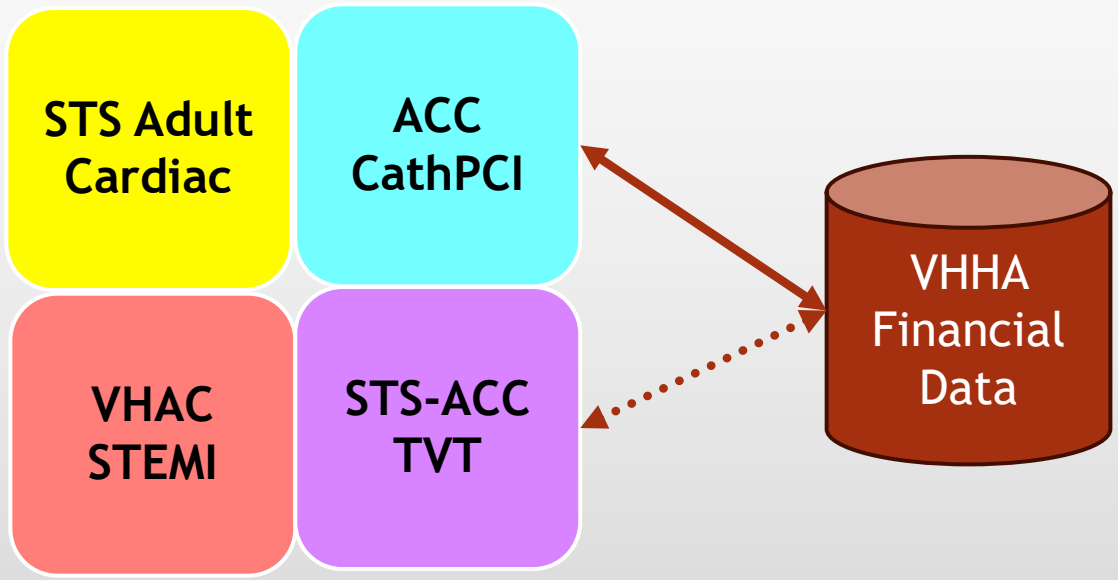
VCSQI

Cost and Quality Data Review

Eddie Fonner
VCSQI Executive Director

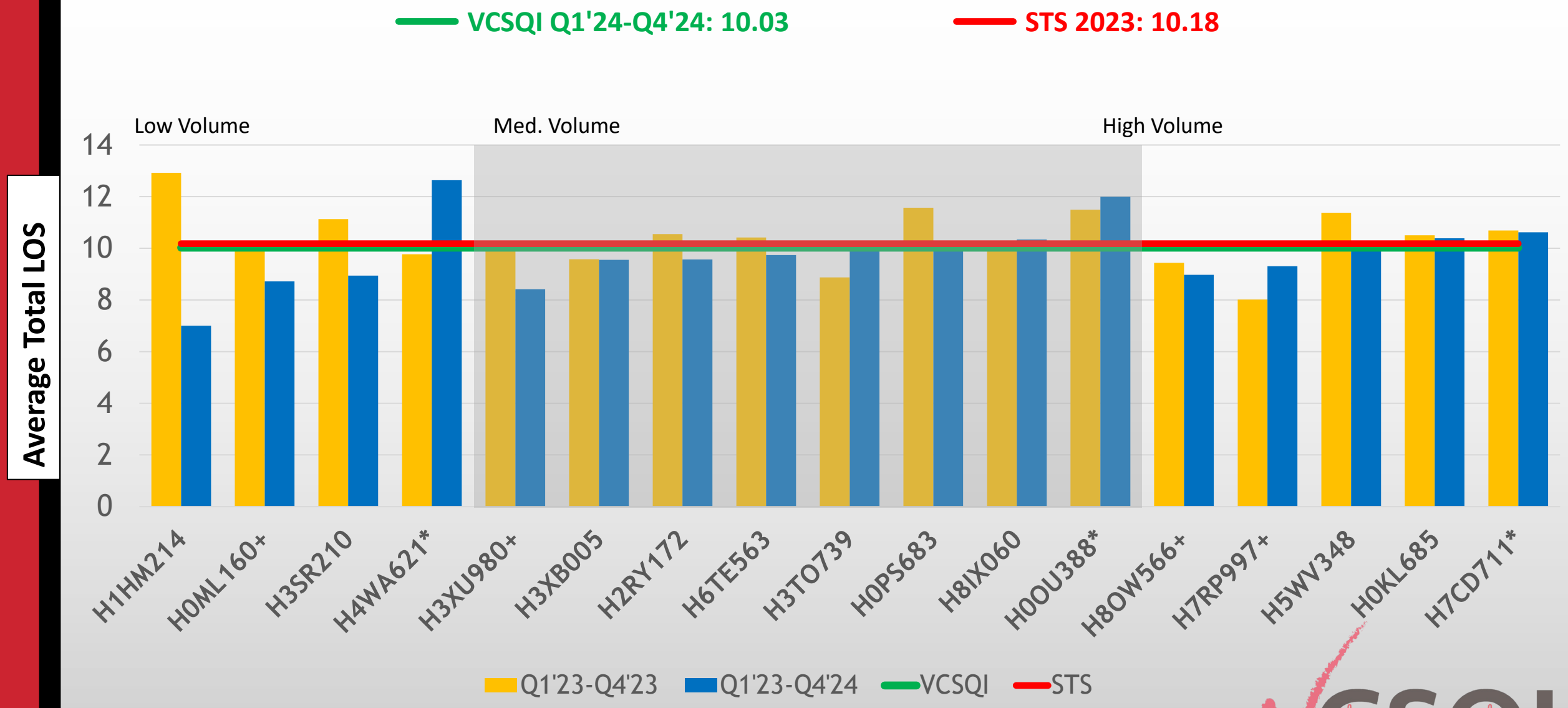
VCSQI Database Summary

- **Extensive Database**
  - 151,000+ STS Adult patients from 2001-2025
  - 168,000+ ACC CathPCI patients (86,000+ PCI procedures)
  - 45,000+ ACC CP-MI episodes
  - 7,600+ TVT operations
- **Quarterly and Ad Hoc Reports**
- **Scientific Publishing**
  - 90+ manuscripts & presentations



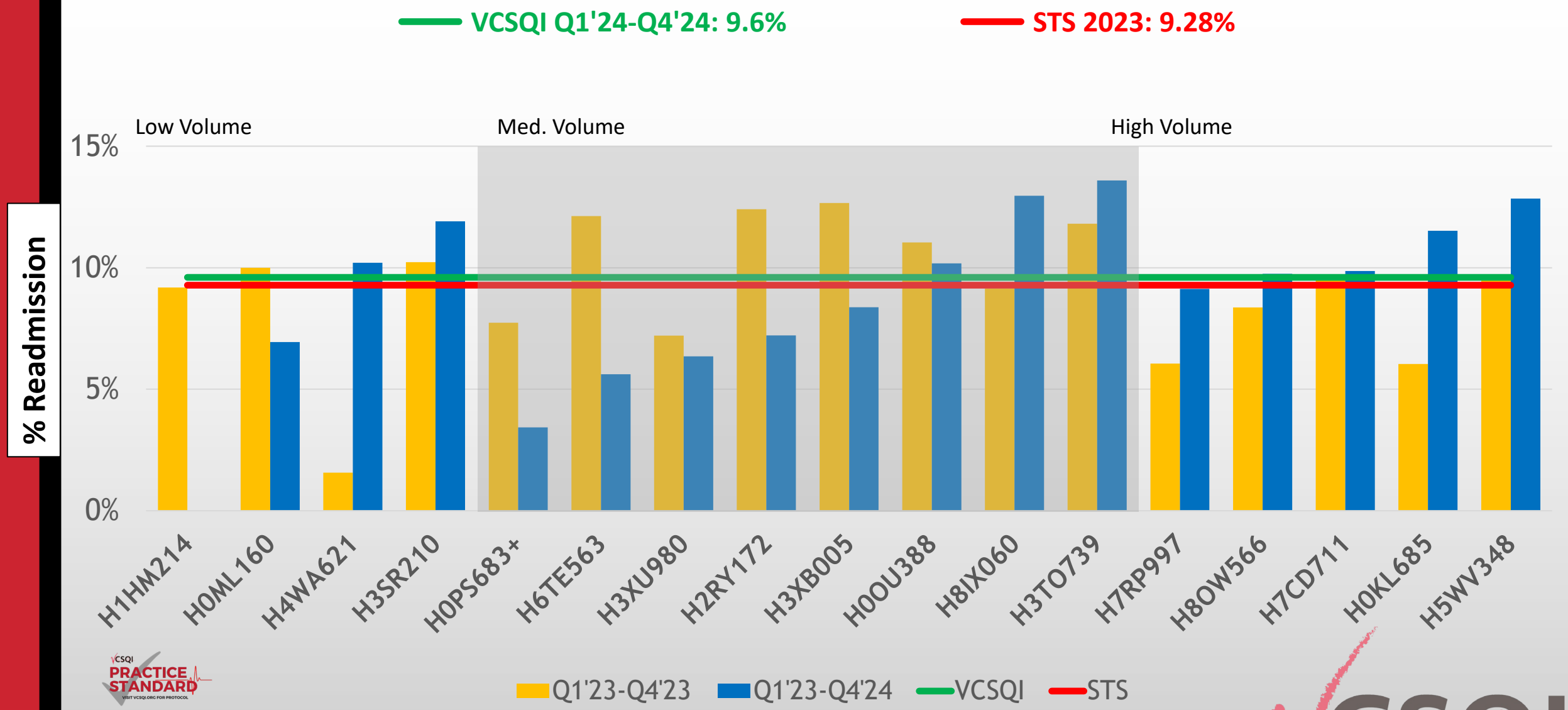
STS Adult Cardiac

Average Total Length of Stay (Days) by Hospital: Isolated CAB, Q1 2023—Q4 2024



For the latest 4 quarter period:
A plus (+) following the hospital code indicates the hospital is statistically better than the rest of VCSQI
An asterisk (*) following the hospital code indicates the hospital is statistically poorer than the rest of VCSQI

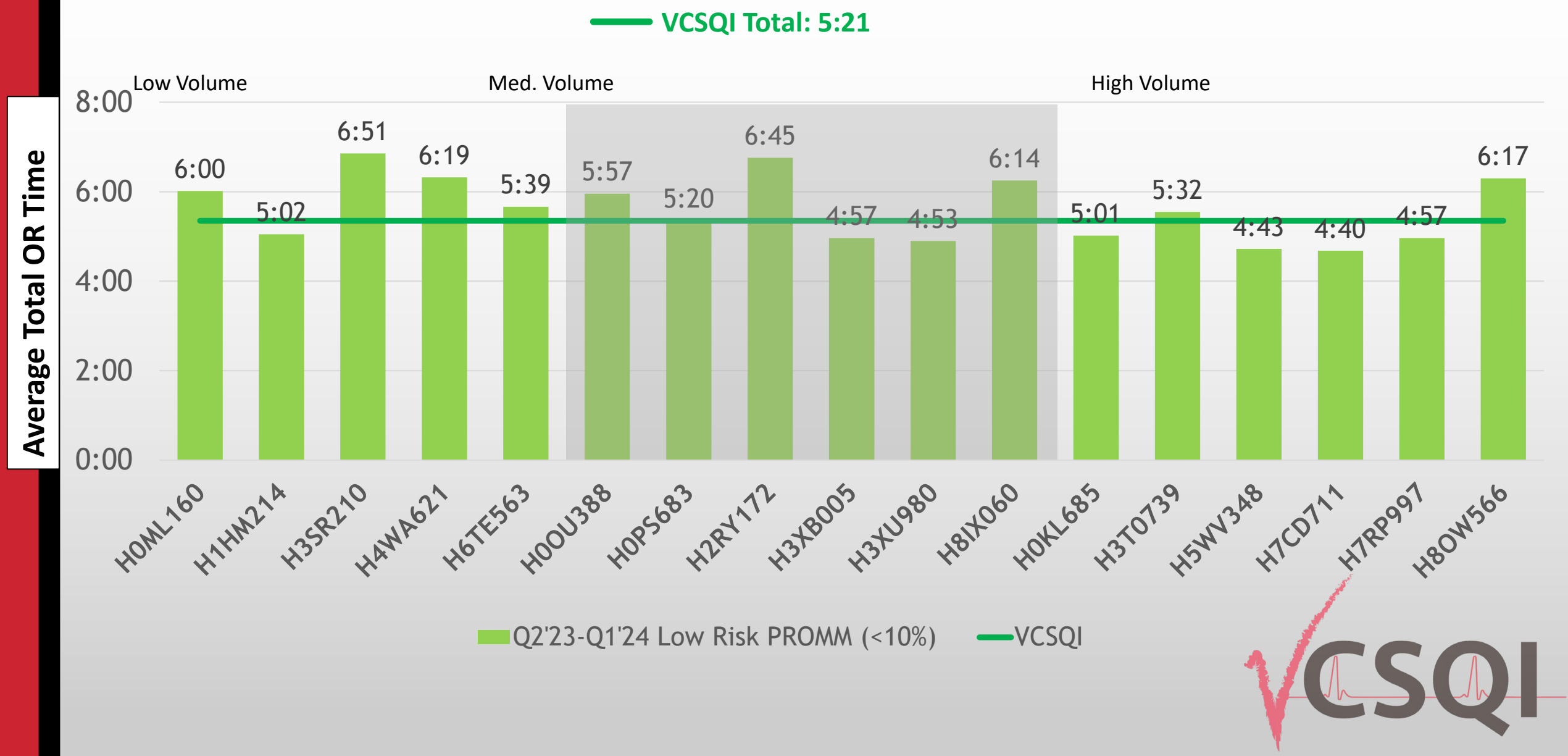
30-Day Readmission by Hospital: Isolated CAB, Q1 2023–Q4 2024



For the latest 4 quarter period:
A plus (+) following the hospital code indicates the hospital is statistically better than the rest of VCSQI
An asterisk (*) following the hospital code indicates the hospital is statistically poorer than the rest of VCSQI

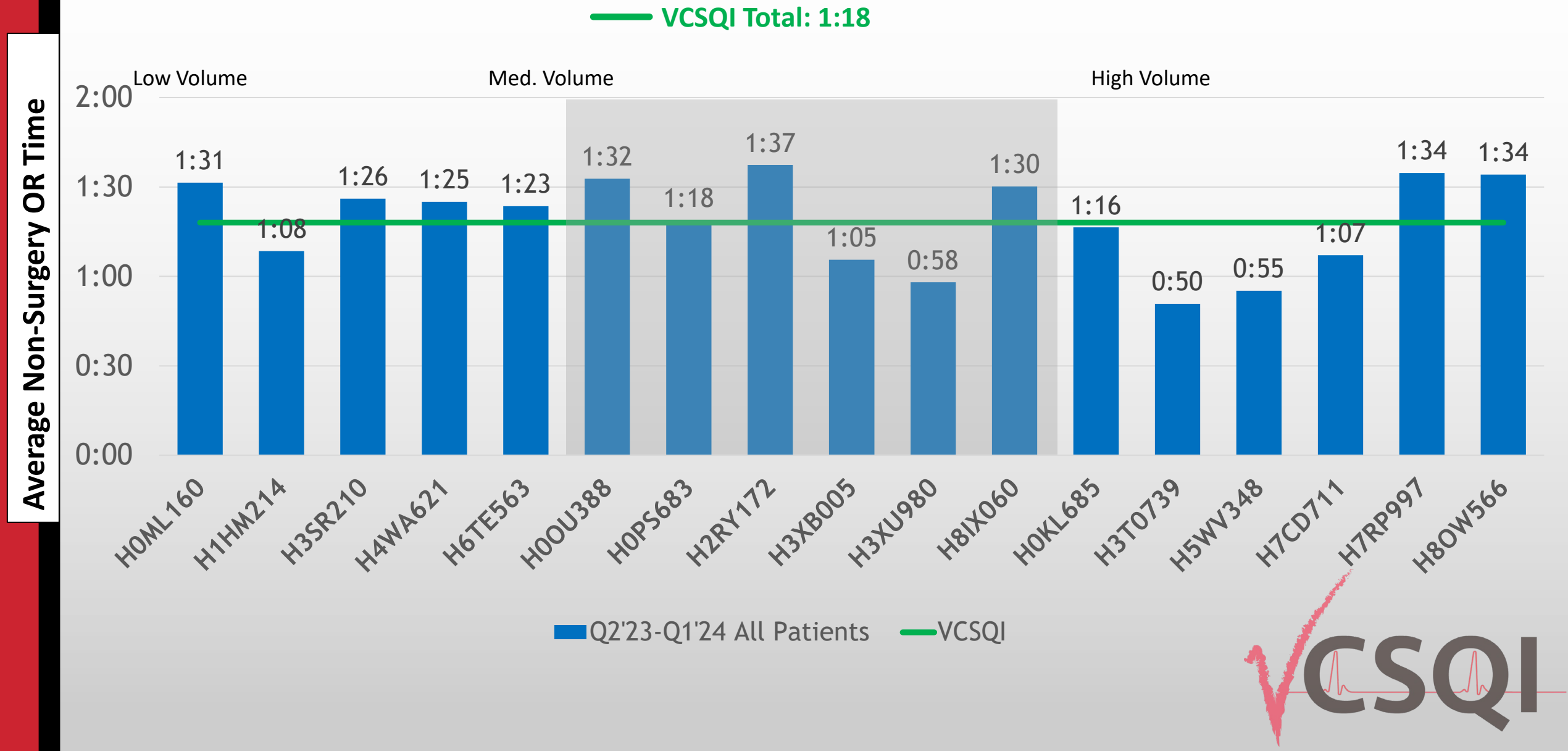
Average Operating Room Time (Hours) by Hospital: Isolated CAB, Q1 2022—Q4 2024

Population: Low Risk PROMM (N=6,131)

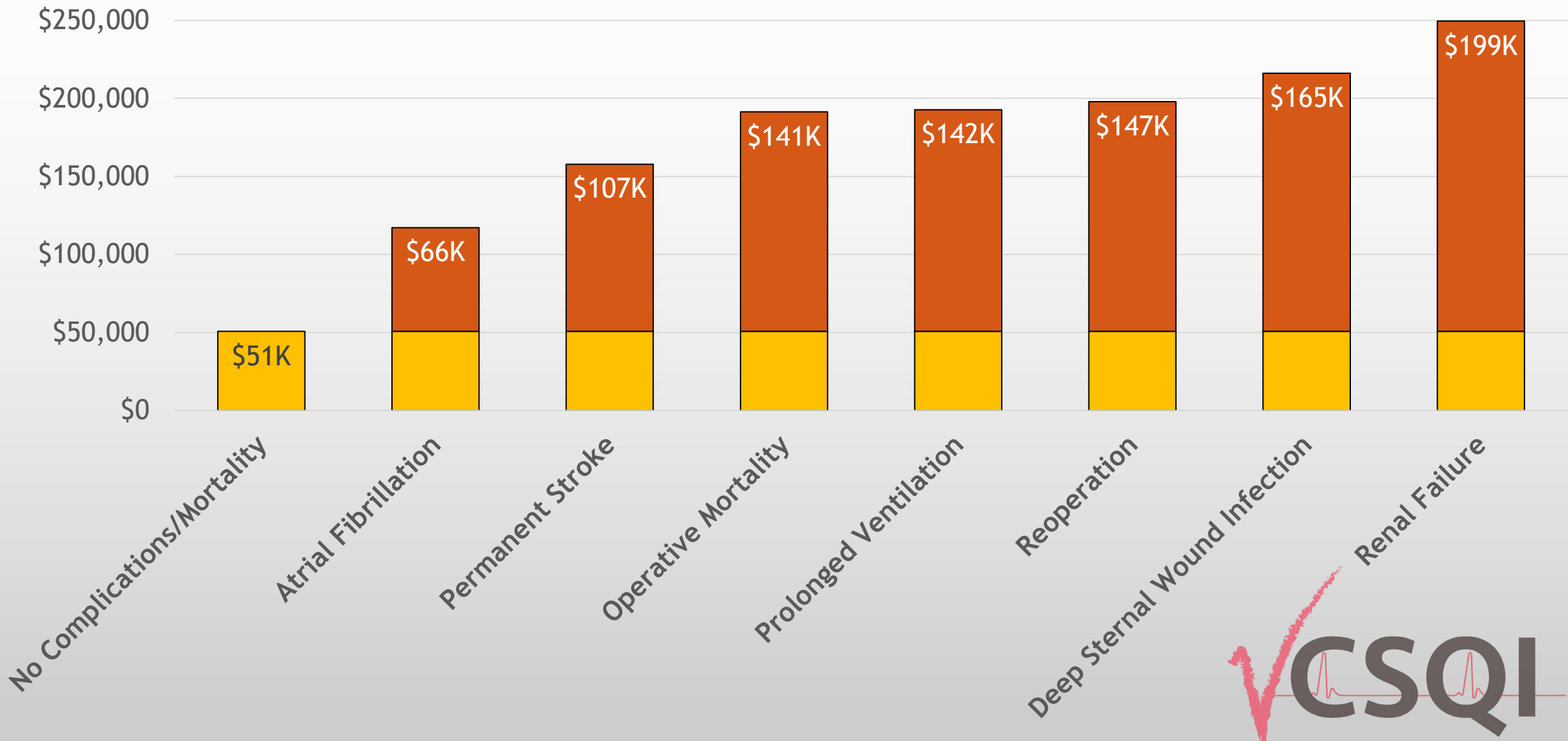


Average Non-Surgery OR Time (Hours) by Hospital: Isolated CAB, Q1 2022—Q4 2024

Population: ALL PATIENTS (N=9,836)

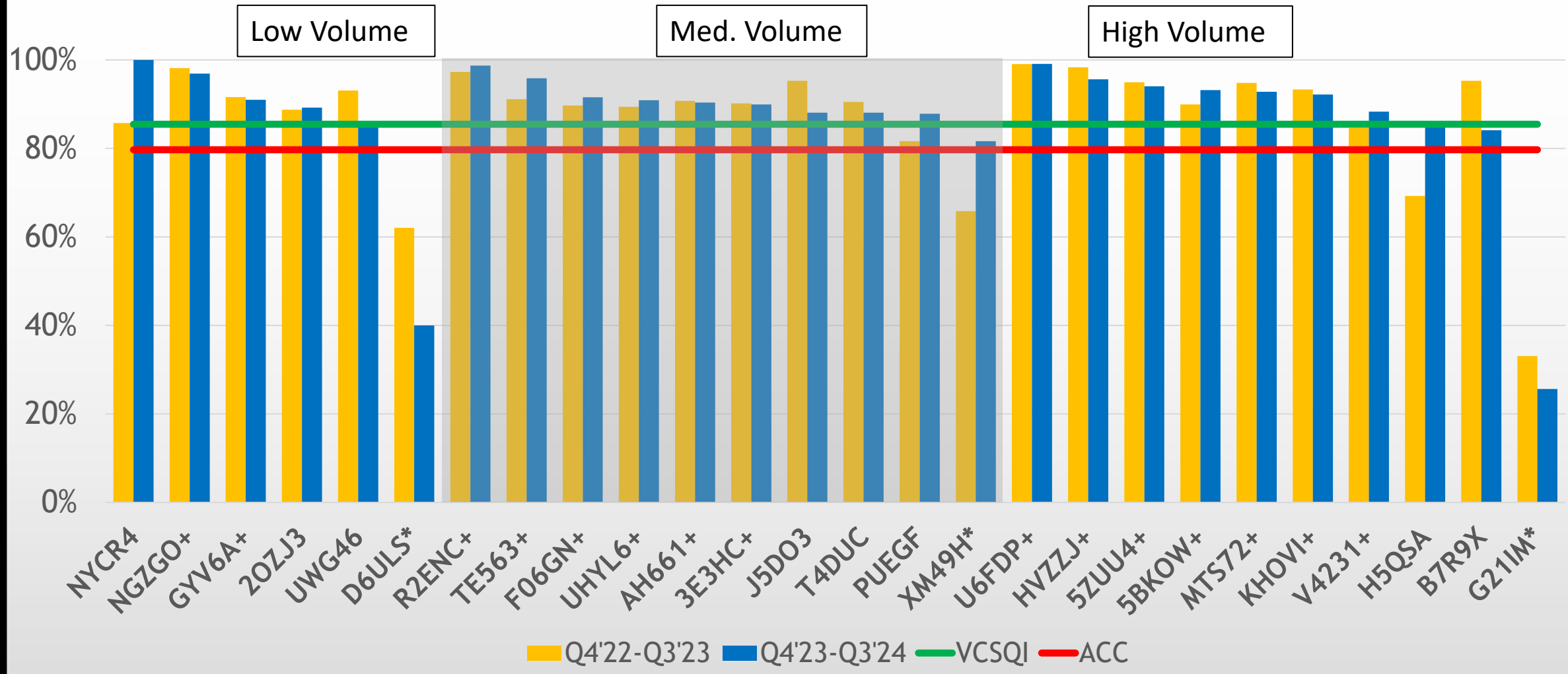


Additive Costs: Isolated CAB, Q4 2021 – Q3 2024



ACC CathPCI

Cardiac Rehab Referral by Hospital: All PCI Procedures, Q4 2022 - Q3 2024 (N=23,806)

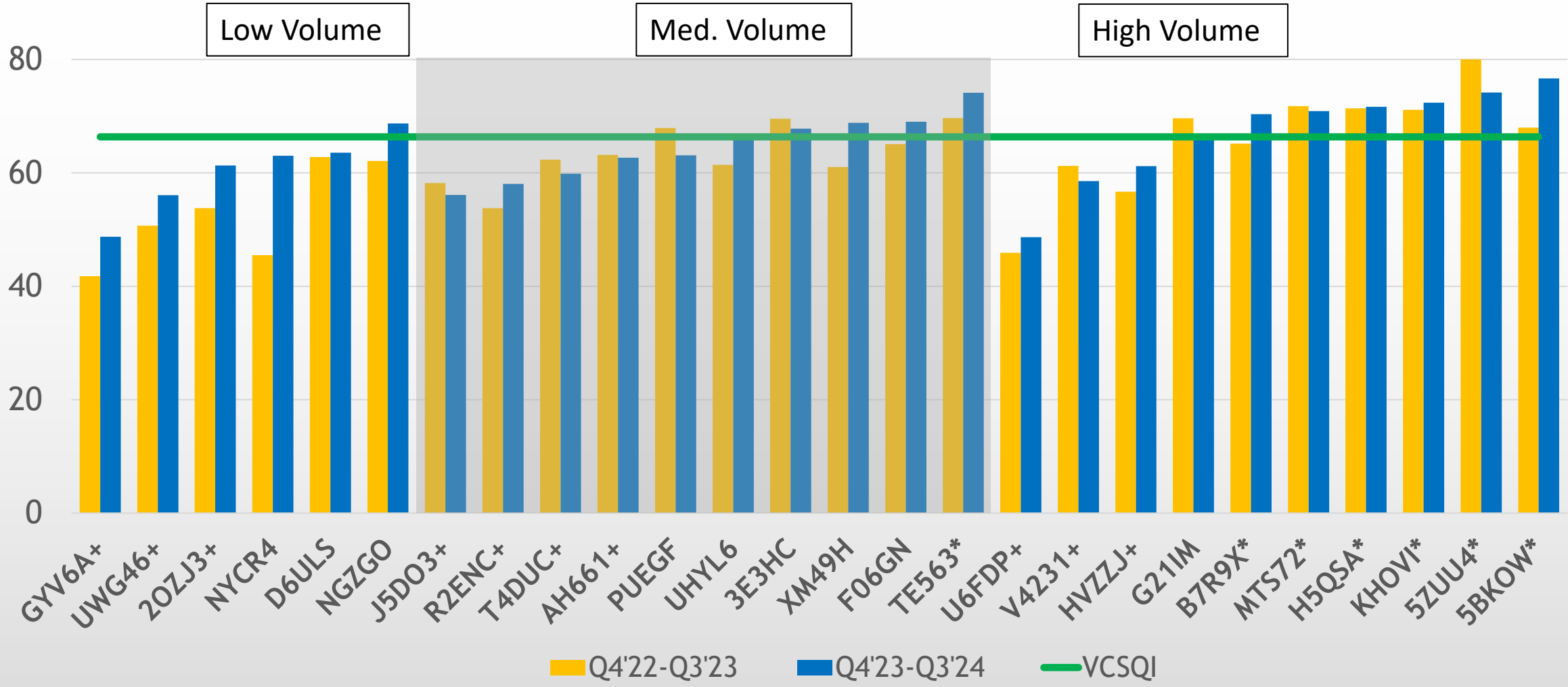


ACC: 79.7%

VCSQI: 85.5%

For the latest 4 quarter period:
A plus (+) following the hospital code indicates the hospital is statistically better than the rest of VCSQI
An asterisk (*) following the hospital code indicates the hospital is statistically poorer than the rest of VCSQI

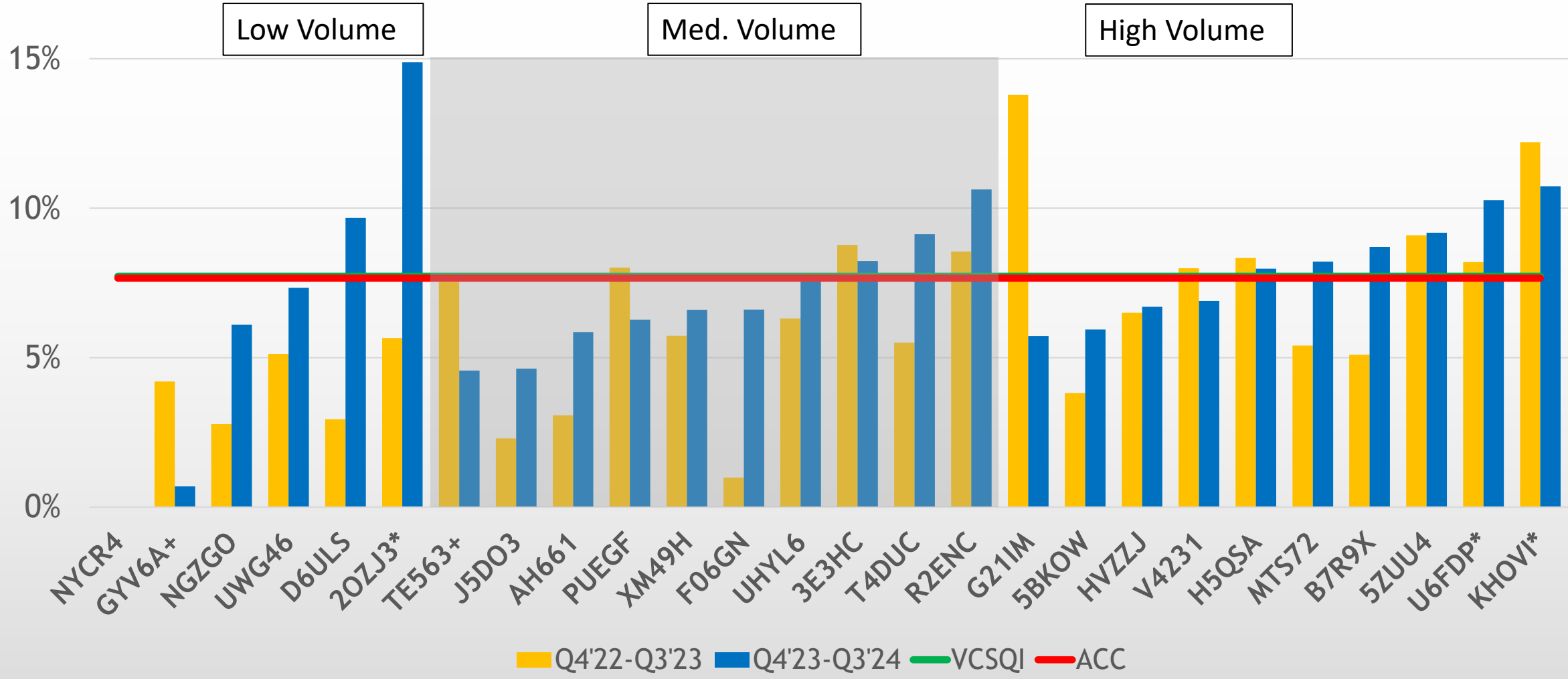
Average Procedure Time (Minutes): All PCI Procedures, Q4 2022 – Q3 2024 (N=24,241)



VCSQI: 66 minutes

For the latest 4 quarter period:
A plus (+) following the hospital code indicates the hospital is statistically better than the rest of VCSQI
An asterisk (*) following the hospital code indicates the hospital is statistically poorer than the rest of VCSQI

Observed AKI by Hospital: All PCI Procedures, Q4 2022 – Q3 2024 (N=14,585)

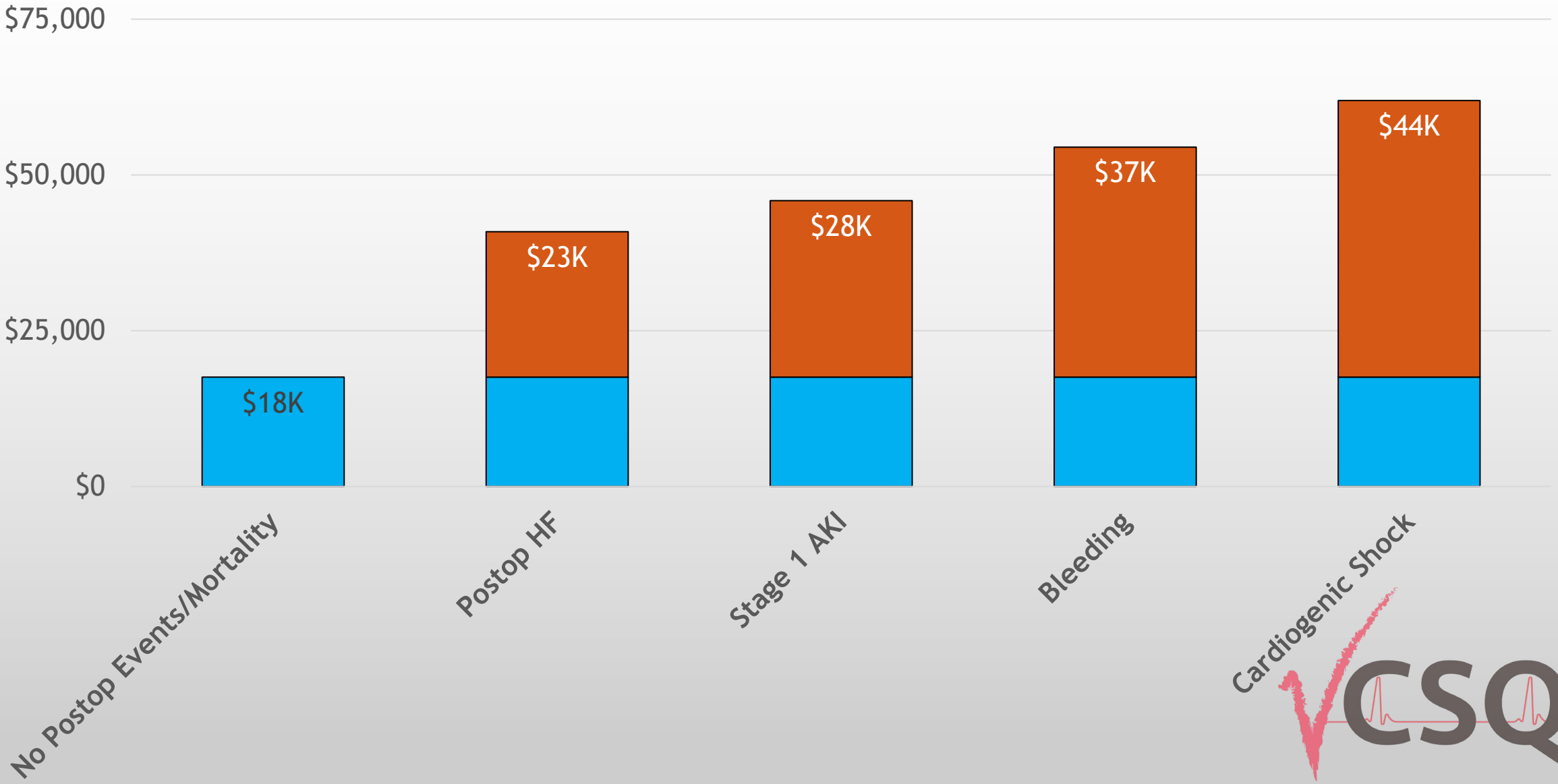


ACC: 7.7%

VCSQI: 7.7%

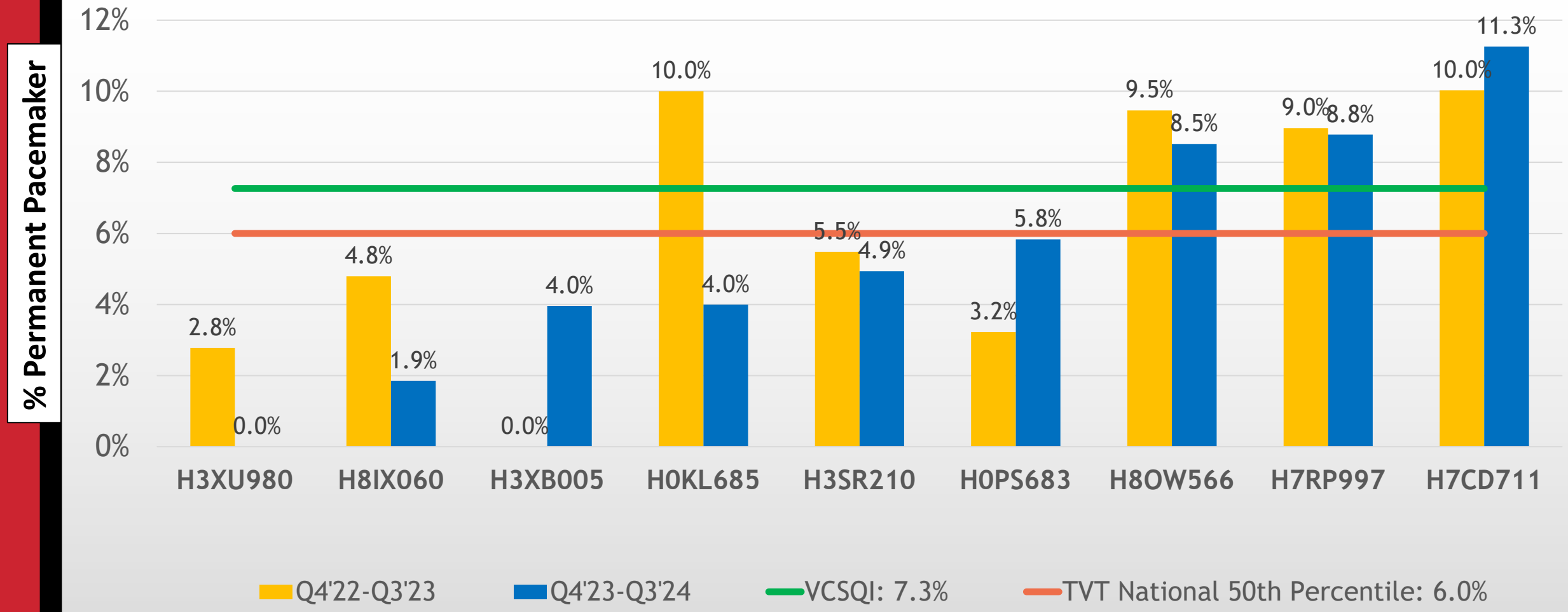
For the latest 4 quarter period:
A plus (+) following the hospital code indicates the hospital is statistically better than the rest of VCSQI
An asterisk (*) following the hospital code indicates the hospital is statistically poorer than the rest of VCSQI

Additive Costs: PCI Procedures, Q4 2021 – Q3 2024

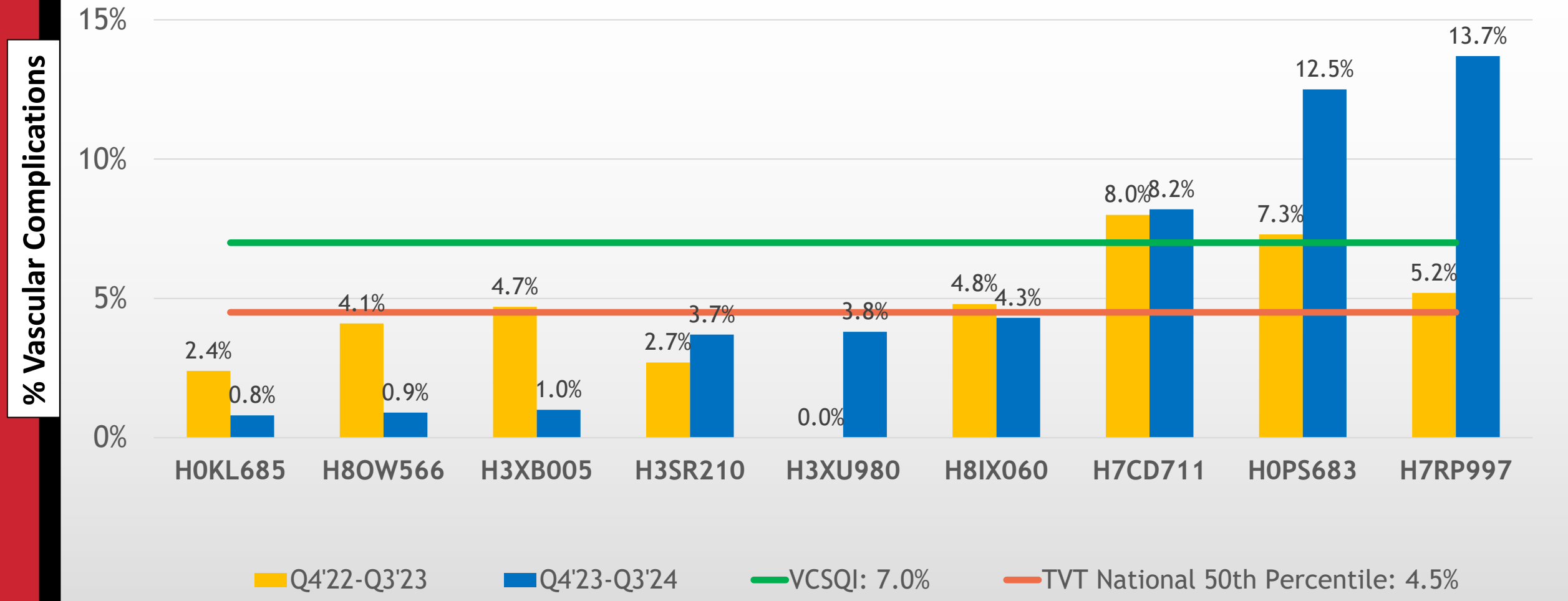


STS-ACC TVT

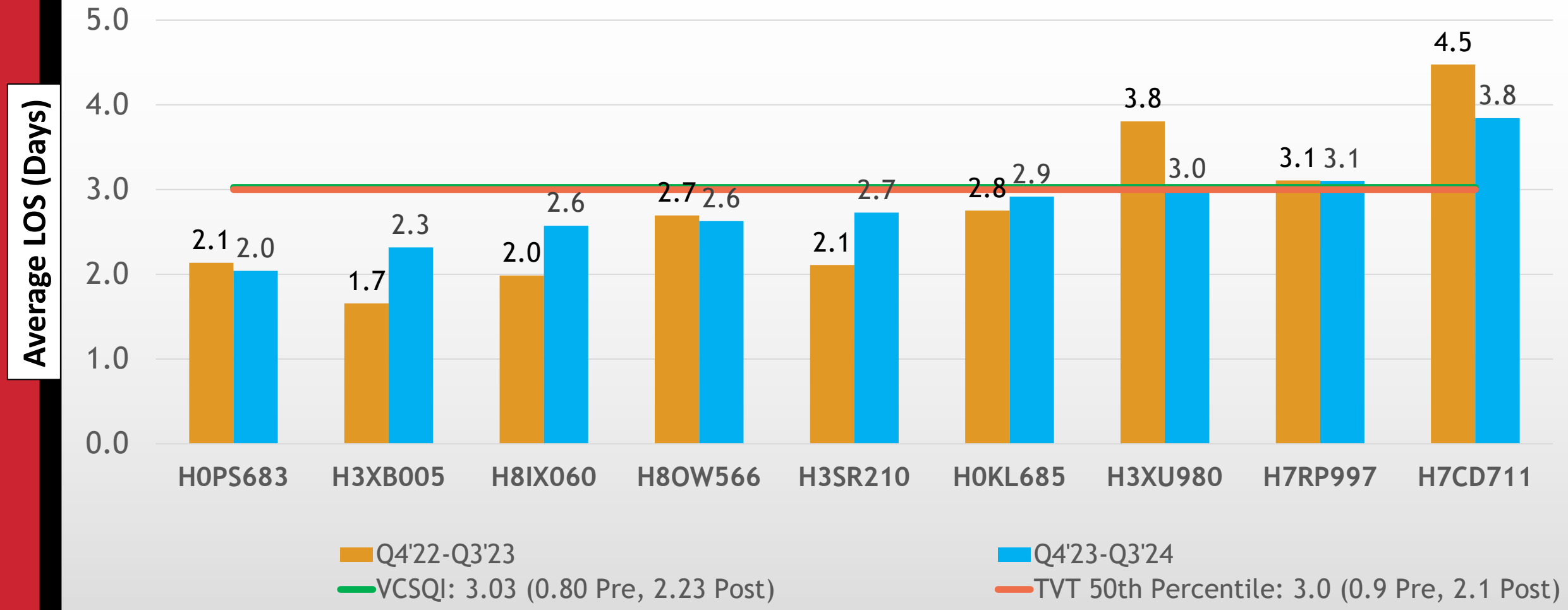
New Permanent Pacemaker by Hospital: All TAVR Procedures, Q4 2022 – Q3 2024 (N=3,679)



Major or Minor Vascular Complication by Hospital: All TAVR Procedures, Q4 2022 – Q3 2024 (N=3,679)



Average Length of Stay: Admit-DC by Hospital: All TAVR Procedures, Q4 2022 – Q3 2024 (N=3,679)




Mark Lewis
@marklewismd
Honestly don't know how to earn that 5th star
Dr Lewis saved my life!

Thank You!

Questions / Suggestions?

Sherri White, MSc, SSGBC
Quality Improvement Advisor
Sherri@vcsqi.org

Eddie Fonner
Exec. Director / Data Science
Eddie@vcsqi.org

Workgroup Updates

Improving heart care quality, patient experience and costs

VCSQI

Quality Committee

A Summary of Achievements, Challenges, and Future Goals

Judy Smith, RN, University of Virginia Health
Chair, Quality Committee

Quality Committee Overview

The Quality Committee is a dedicated team of STS data managers committed to maintaining the integrity, accuracy, and compliance of clinical data within the Society of Thoracic Surgeons (STS) registries. Our role is crucial in supporting high-quality patient outcomes, ensuring data reliability, and driving continuous improvement in cardiothoracic surgery reporting.

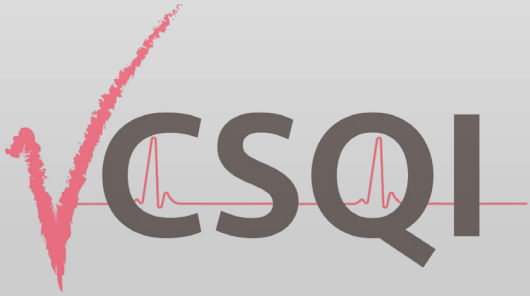
Our Commitment:

The Quality Committee is dedicated to fostering data integrity, transparency, and continuous improvement in cardiothoracic surgery. Through meticulous data management, we contribute to better patient outcomes and enhanced healthcare quality.

Meeting Highlights

Meetings are the second Tuesdays of the month at 1200 ET

Improving heart care quality, patient experience and costs



Quality Committee Topics this past year….

- Recalibrating O:E's
- STS Beta Blocker Quality Project
- Frailty Scoring
- New Risk Models: AVR and MVRr with and without CABG, all procedure model
- Schedule A's for all our surgeons
- Asking questions
- Exceptional Risk Category
- IQVIA reports
- Perfusion by Meetali Mahendrakar from Mass General-Brigham

Topic: Cardiopulmonary Bypass & Surgical Techniques

Guest Speaker: Meetali Mahendrakar, MBBS, MS

Key Areas Covered:

- Cardiopulmonary Bypass Fundamentals
- Left Heart Bypass vs. Full Bypass
- Deep Hypothermic Circulatory Arrest
- Surgical Best Practices & Challenges
- Interactive Q&A Session with Attendees

88 Registered Guests
18 Post-Meeting Watches

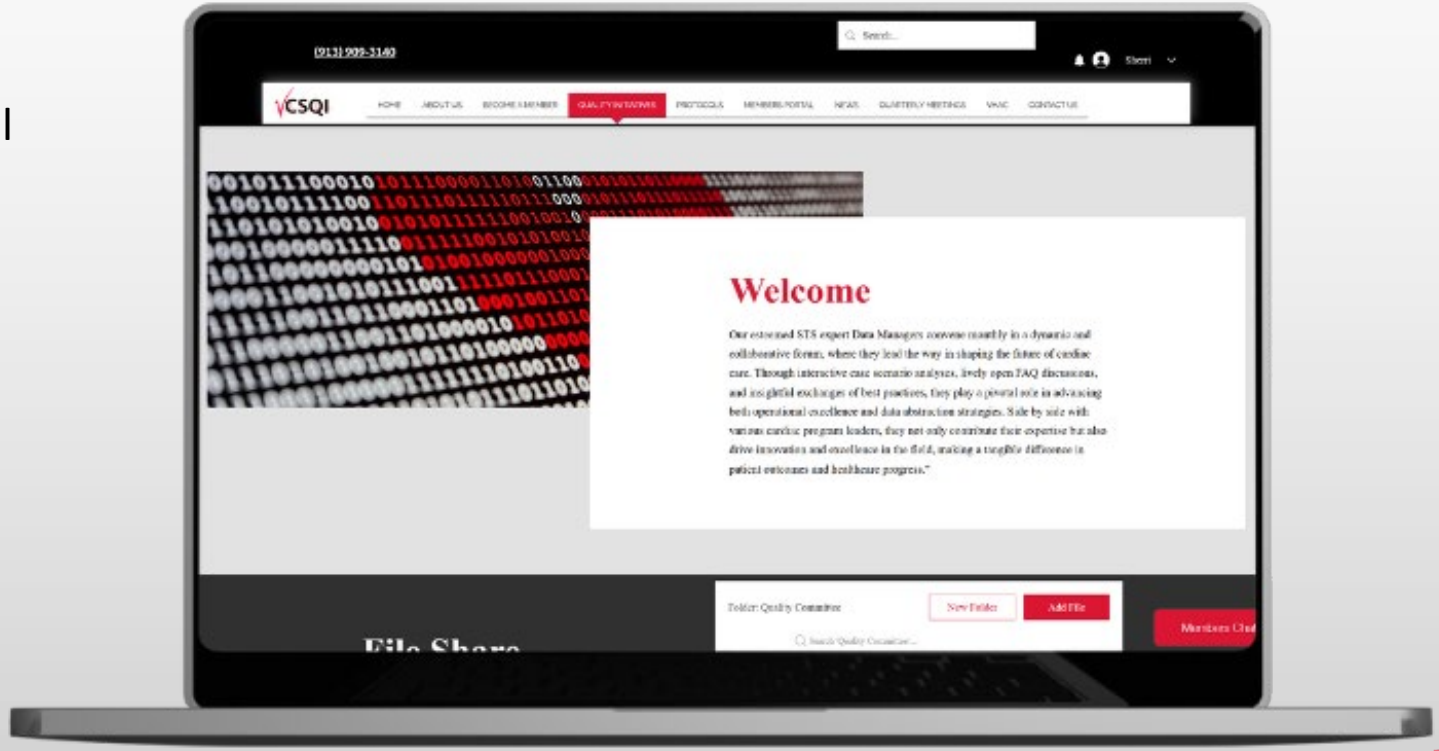
48 Registered Guests
61 Post-Meeting Watches

VCSQI

Collaborative Space on VCSQI.org

Coming Soon!

- Meeting Material
- FAQs
- Recordings
- …and more!



Coming Soon to an “Eddie Call” Near You!!!

- Dustin Money ECMO Basics
- Kali Carroll Coding Aortic Procedures
- Lisa Fuzy Adult Congenital Procedures

- What would you like to learn?
- What would you be willing to teach?

Collaboration Across State Lines

Combined Data Managers Workshop January 2025

- Dr. Rawn Salenger - Mitral Valve Surgery A to Zed
- Unlocking Performance Potential: How Biome Supports CT Surgery Excellence
- Melinda Offer - AQO Hot Topics and Q&A Session
- Diane Alejo - Demo: How Data Drives Quality

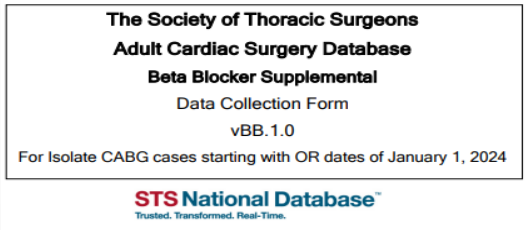
MCSQI
MARYLAND CARDIAC SURGERY QUALITY INITIATIVE

VCSQI

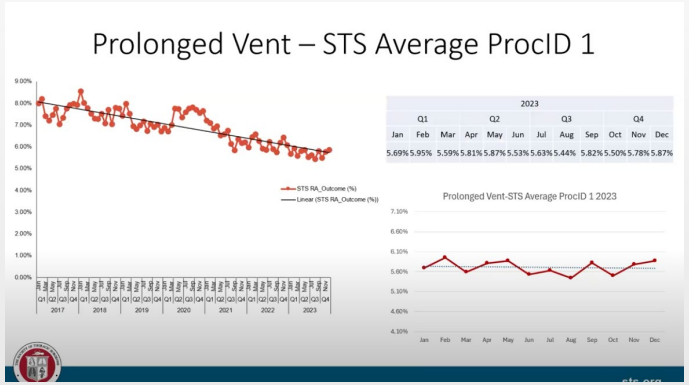
VCSQI

STS National also has many resources and Projects

- Iso CABG Beta Blocker Project continues due to low enrollment



- STS National Quality project for 2024 was decreasing Prolonged Vent for patients with Isolated CABG



- 2025 STS National Quality Project is decreasing blood product use for all patients with cardiac surgery

- STS is looking for presenters for their monthly calls

Data Manager Training Webinar Agenda 12:00 PM CT		
Session 1	2/25/2025	Overview STS Website, FAQ Mailbox, Training Manual and Other Resources
Session 2	3/4/2025	Overview of Data Specifications, Software Specifications, Risk Model
Session 3	3/11/2025	Case Inclusion and Choosing the Index Procedure, PROC ID Chart
Session 4	3/20/2025	Harvesting your Data and the Data Quality Report
Session 5	3/25/2025	National Report Overview and Process / Outcome Measures
Session 6	4/1/2025	Updating Participant Forms, STS Helpdesk, and Red Cap Forms
Session 7	4/8/2025	IQVIA Reporting Overview

Networking Opportunities

- STS Data Managers Facebook Group
  - At last check up to 430 Members!
- STS Data Manager Collaborative
  - Formerly the Data Manager Mentorship Program, pairs data managers who are seeking advise related to data abstraction.
- STS Regional Groups
  - Offers a collaborative networking environment for peer-to-peer support and non-clinical guidance related to abstraction across specific regions.

AQO 2025

- Intermacs and Pedimacs Session: Tuesday, September 23rd VIRTUAL
- CHSD and GTSD Sessions: Thursday, October 2nd
- **ACSD Session: Friday, October 3rd**
- Grand Hyatt San Antonio Riverwalk
- AQO Session Proposal deadline is April 18th
  - Learn more about submitting a session proposal.
- Both In Person (ACSD, CHSD, GTSD) and Virtual options (all databases) will be available
- Cost information will be shared as soon as it's available

Major Initiatives & Future Goals

- Development TVT Workgroup
  - Coming Soon – John Saxon, MD - Champion
- Increased focus on reducing post-op atrial fibrillation rates
- Strengthening collaboration with STS and national quality improvement groups
- Exploring innovative care models such as universal bed utilization

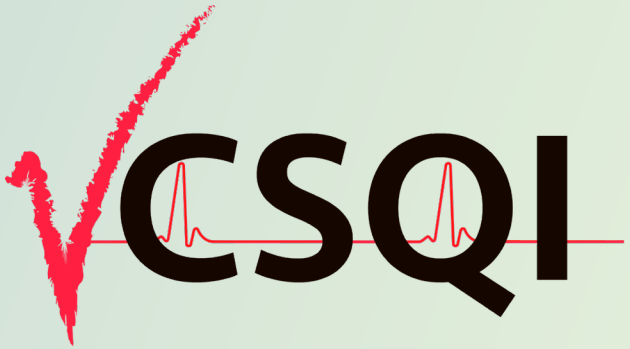
Acknowledgments & Closing

A heartfelt thank you to all committee members, healthcare partners, and contributors for their dedication to quality improvement and patient care.

Looking forward to another year of impactful collaboration!

Perfusion Group

Eve Dallas, CCP
University of Virginia



Perfect Care Impact Network

Goal-Directed Perfusion Survey Results

Perfect Care Impact Network

	Number of Members	Key Accomplishments
MCSQI MARYLAND CARDIAC SURGERY QUALITY INITIATIVE	11 Cardiac Surgery Facilities	Tenets for Early Extubation, Blood Management, Readmission Reduction, Sternal Healing, and STS Data Management. Linking STS & Administrative Data
VCSQI	17 Cardiac Surgery, 29 Cardiology Facilities	Protocols for A-Fib, RBC Transfusion, Readmissions, and AKI
PERFECTCARE	3+ Cardiac Surgery Facilities	Successful grant from Duke Endowment, pioneering Remote Patient Monitoring and PROs

Goal-Directed Perfusion Survey

N=24 Responses Total
(70% response rate)

By State:	Maryland: **N = 10**	Virginia: **N = 10**	North Carolina: **N = 4**
By Volume Group:	Low Volume: (<200 Cases/Year) **N = 3**	Medium Volume: (200-400 Cases / Year) **N = 6**	High Volume: (>400 Cases / Year) **N = 15**

Clinical Practice References

	AmSect Standard or Guideline	VCSQI 2023 Card Surg Recomm	PERForm 2022 Data Collect Tool	CPG* Amsect 2015 Temp Mgmt during CPB	CPG* Amsect 2018 Anticoagulation during CPB	CPG* Amsect 2021 Patient Block Mgmt	CPG* Amsect 2022 Prevent CSA-AKI	MUSC/UofMich 2023 ClinPracSurvey 2020
DO2 Measurement	✅						✅	
ANH			✅			✅		
RAP	✅		✅			✅		
Cerebral Oximetry	✅	✅	✅					
Hemoconcentator	✅		✅			✅		
Transfusion Trigger			✅					
Viscoelastic Devices			✅					
Participate in regional perfusion collaborative			✅					
***Clinical Practice Guidelines**								

Reference List:

- Lohbusch B, Olson K, Magowan B, Cherichella R, Wolverton J, Dell'Aiera L, Likosky DS, Fitzgerald D. Adult Clinical Perfusion Practice Survey: 2020 results. J Extra Corpor Technol. 2023 Mar 24;55(1):3-22.
- The PERForm Registry. (2022). Retrieved from: https://amsect.org/policy-practice/perform
- American Society of Extracorporeal Technology (AmSect). Standards and Guidelines for Perfusion Practice. Available at: https://www.amsect.org/p/cm/ld/fid=1617.
- Virginia Cardiac Services Quality Initiative (VCSQI). AKI Reduction Recommendations and Suggestions for Care. Available at: https://www.vcsqi.org
- Tibi P, McClure RS, Huang J, et.al. (2021) STS/SCA/AmSect/SABM Update to the Clinical Practice Guidelines on Patient Blood Management, J Extra Corpor Technol 53(2), 97-124.
- Brown JR, Shore-Lesserson L, Fox AA, Mongero LB, Lobdell KW, LeMaire SA, De Somer FMJJ, von Ballmoos MW, Barodka V, Arora RC, Firestone S, Solomon R, Parikh CR, Shann KG, Hammon J, Baker RA. The Society of Thoracic Surgeons/Society of Cardiovascular Anesthesiologists/American Society of Extracorporeal Technology Clinical Practice Guidelines for the Prevention of Adult Cardiac Surgery-Associated Acute Kidney Injury. J Extra Corpor Technol. 2022 Dec;54(4):267-290.

Do you use DO2 as a measure of perfusion adequacy on pump?

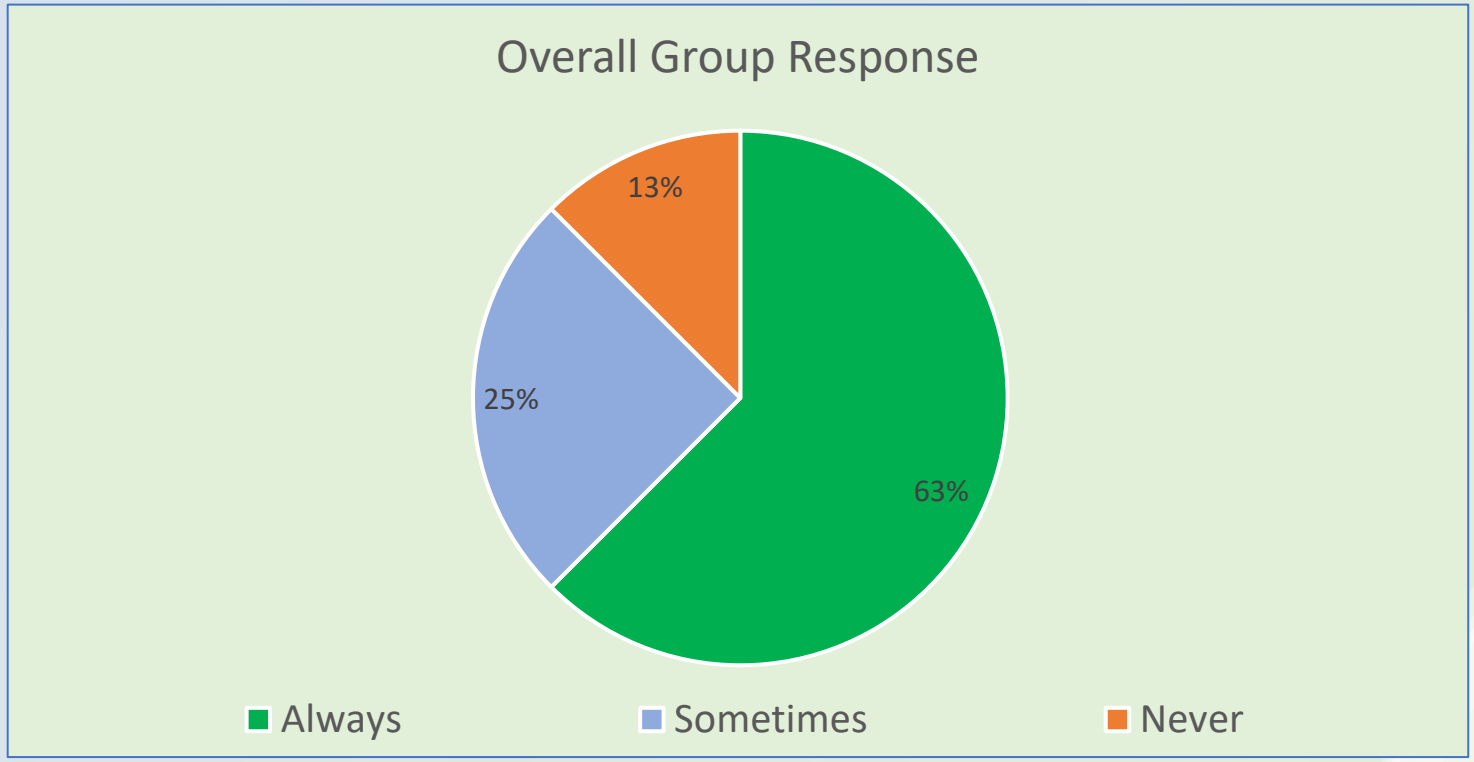
Explanation of DO2:

Amount of oxygen in the blood that is delivered to body's tissues and organs. There are two variables: amount of oxygen in the blood and cardiac output. Most recent guidelines recommend threshold on CPB >= 280ml/min/m2

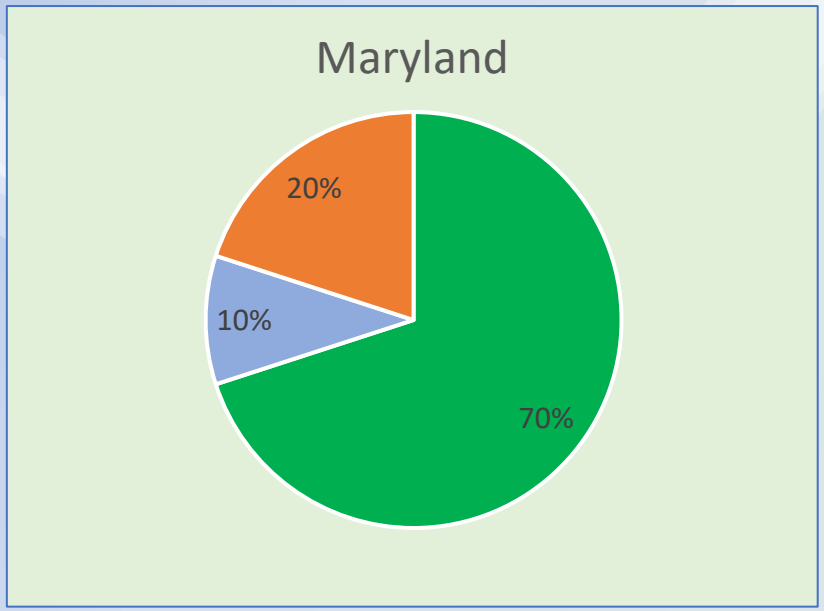
$DO_2 = CaO_2 \times CO \times 10$

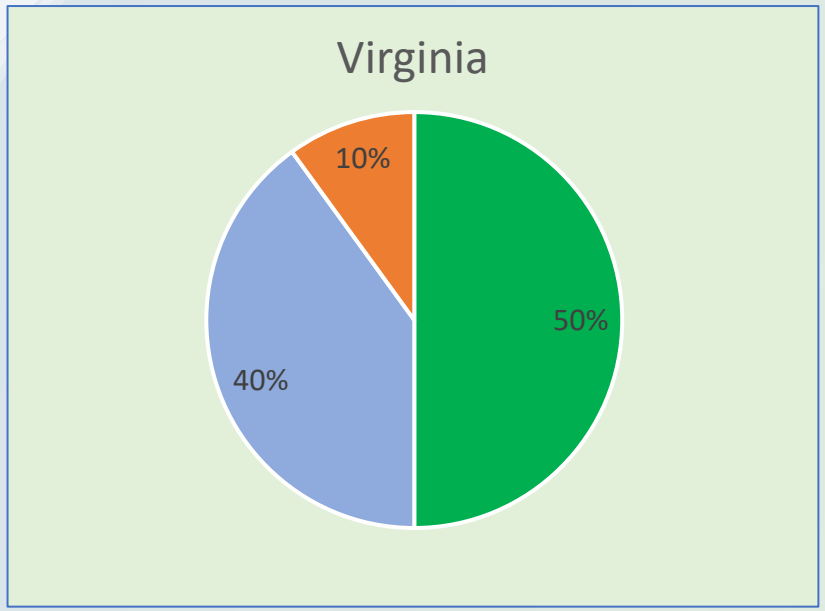
where $CaO_2 = (1.34 \times Hgb \times SaO_2) + (0.003 \times PaO_2)$

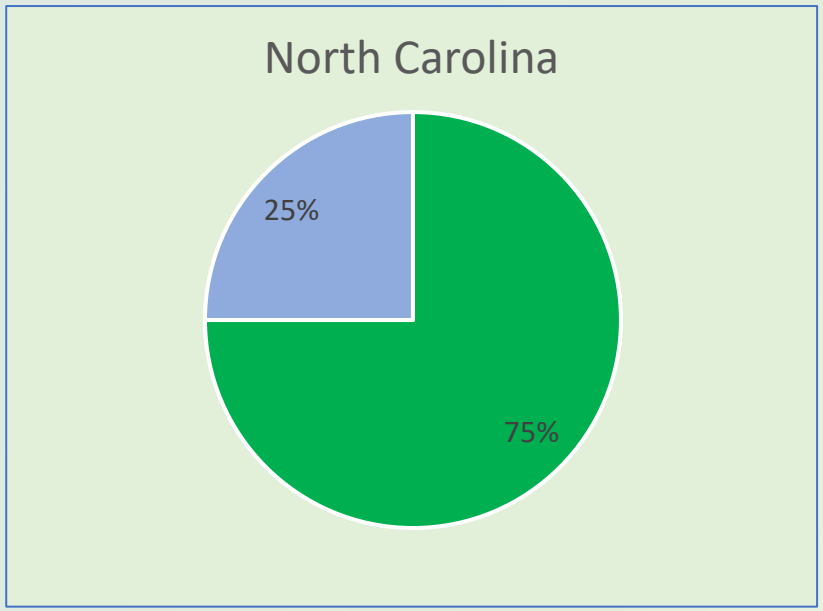
and $CO = HR \times SV$

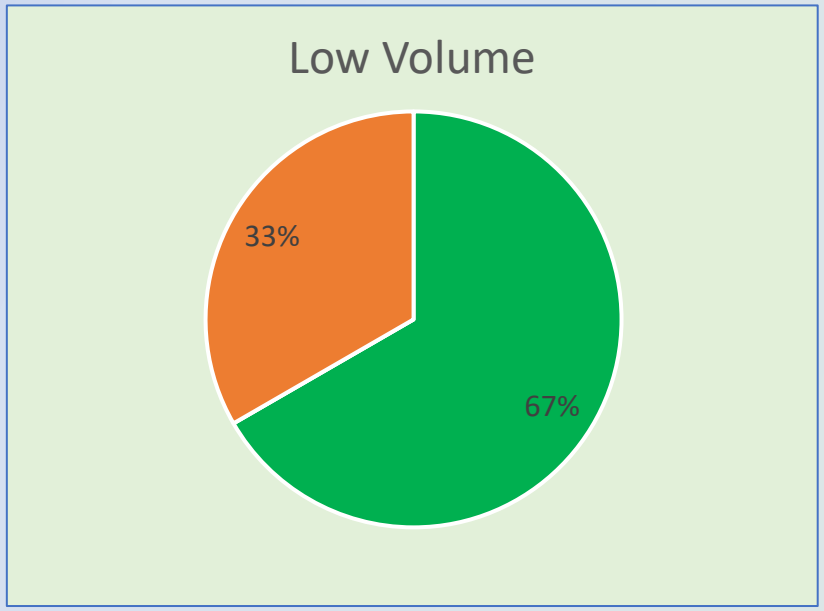


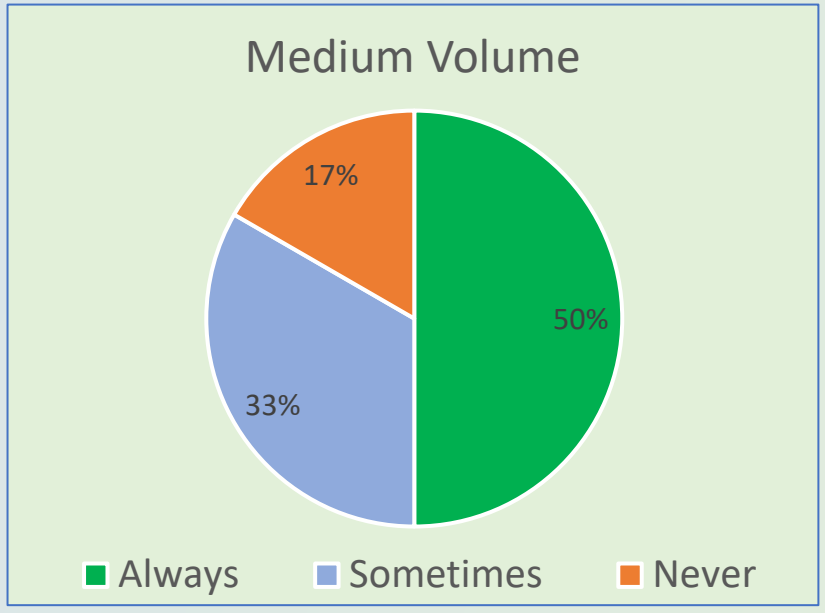
Do you use DO2 as a measure of perfusion adequacy on pump?

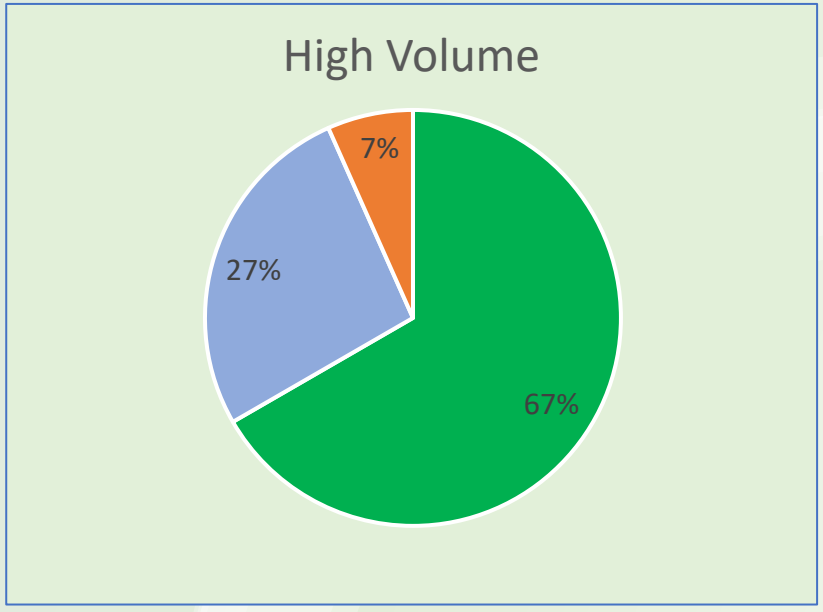








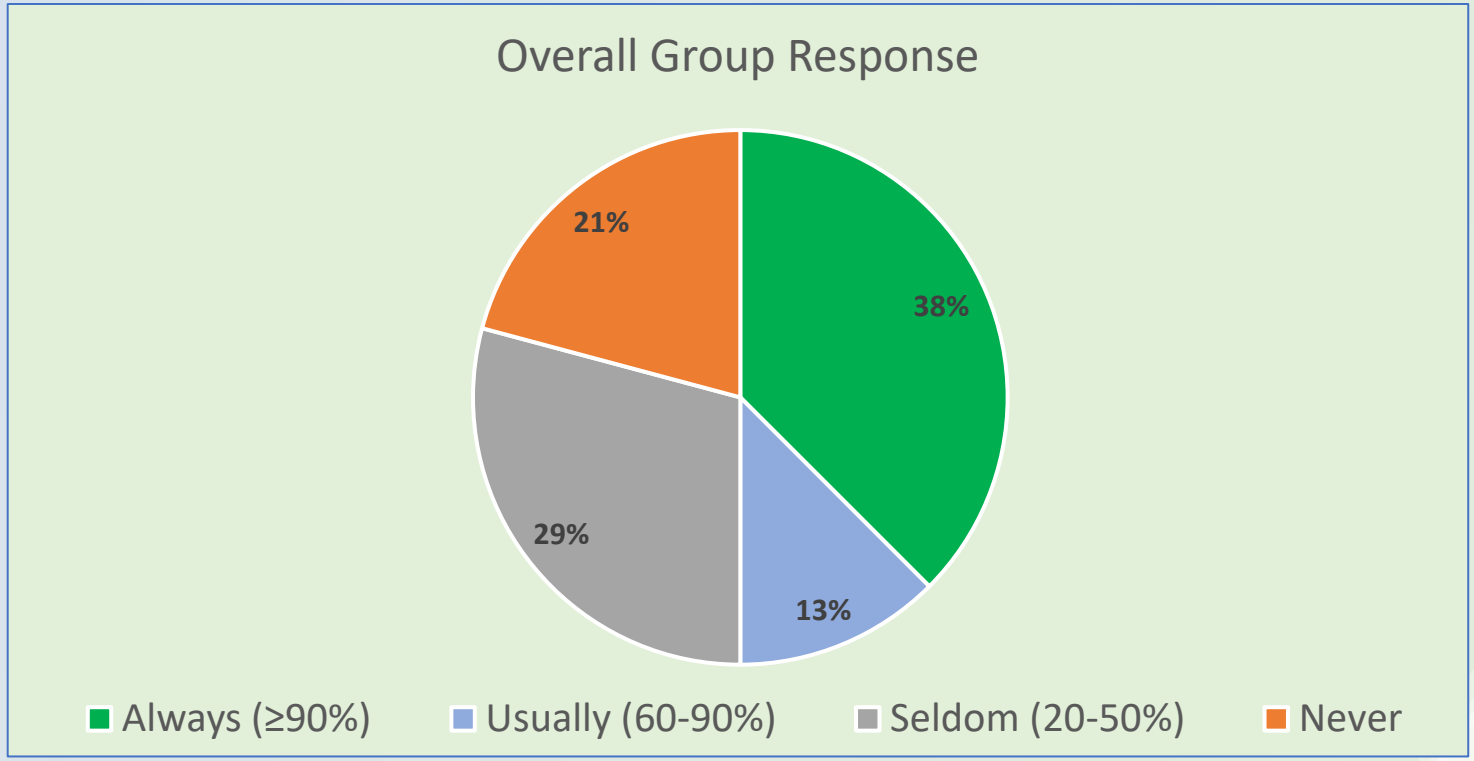




Do you practice ANH?

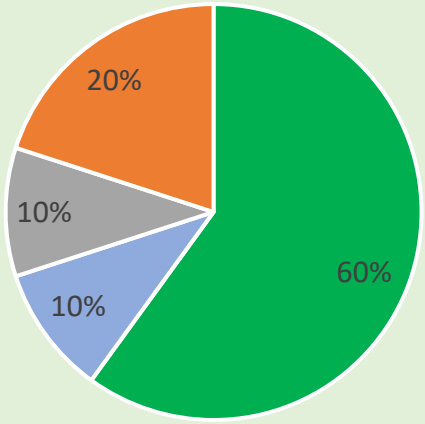
Explanation of ANH:

Acute normovolemic hemodilution. Patient's blood is removed prior to CPB to a collection bag, stored during CPB and returned to the patient post-CPB. Anesthesia may elect to displace sequestered blood volume with crystalloid volume to maintain euvolumia.

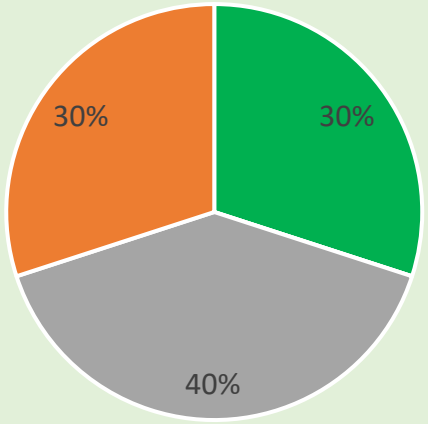


Do you practice ANH?

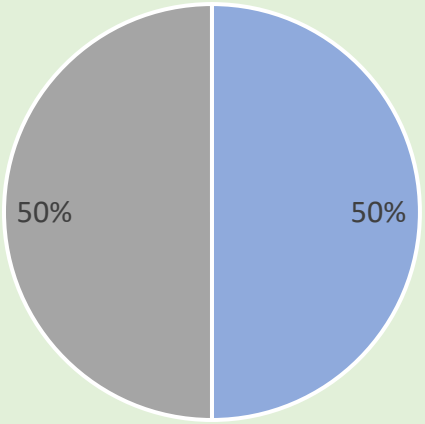
Maryland



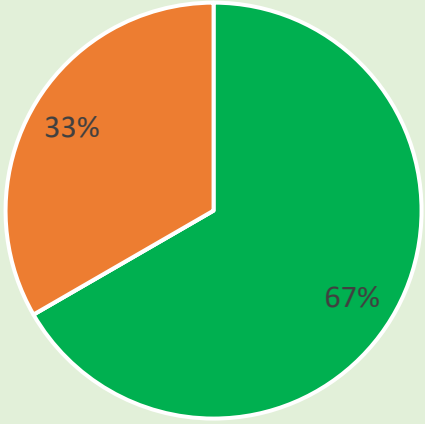
Virginia



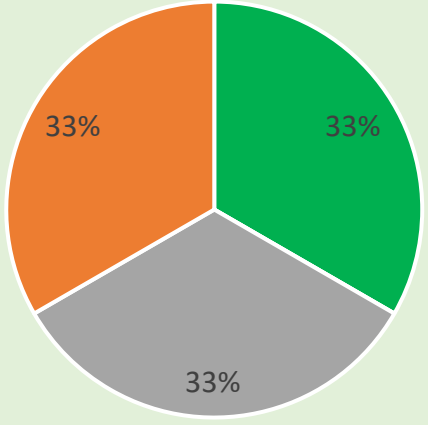
North Carolina



Low Volume

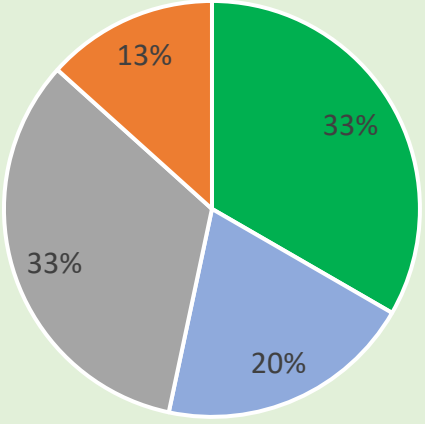


Medium Volume



Always Usually Seldom Never

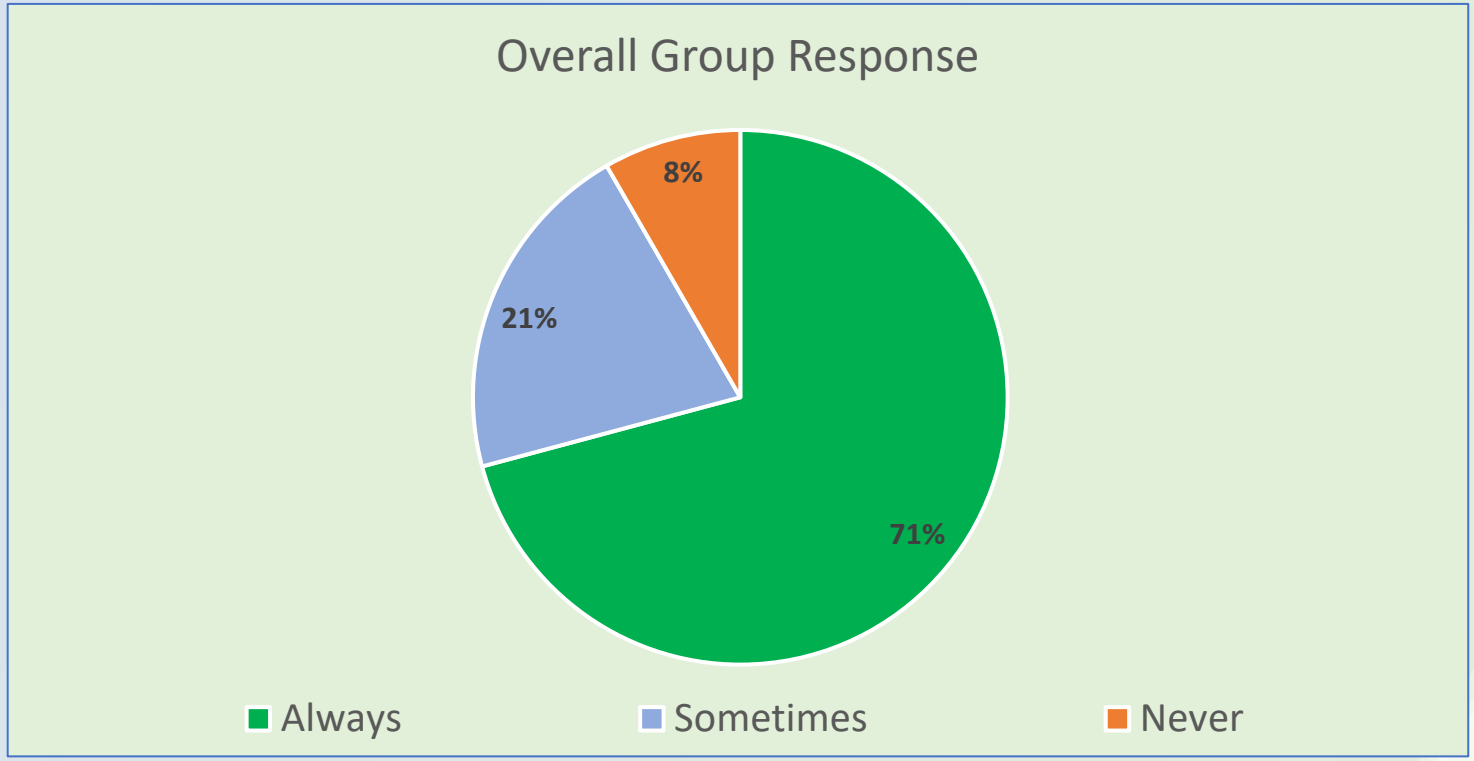
High Volume



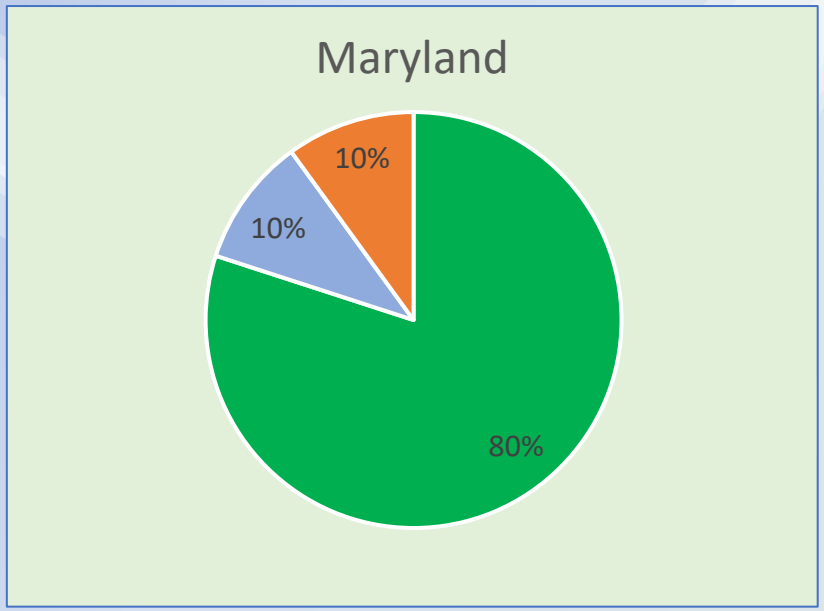
Do you RAP your circuit?

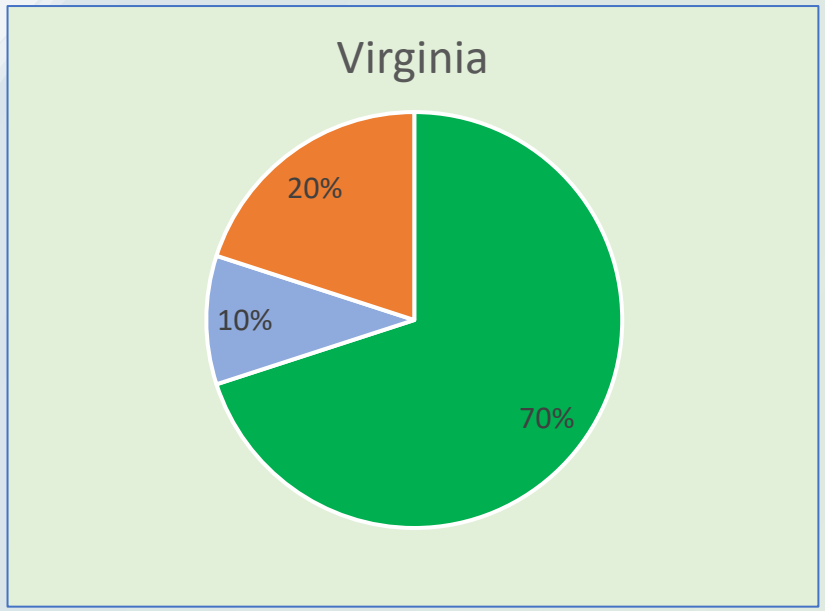
Explanation of RAP:

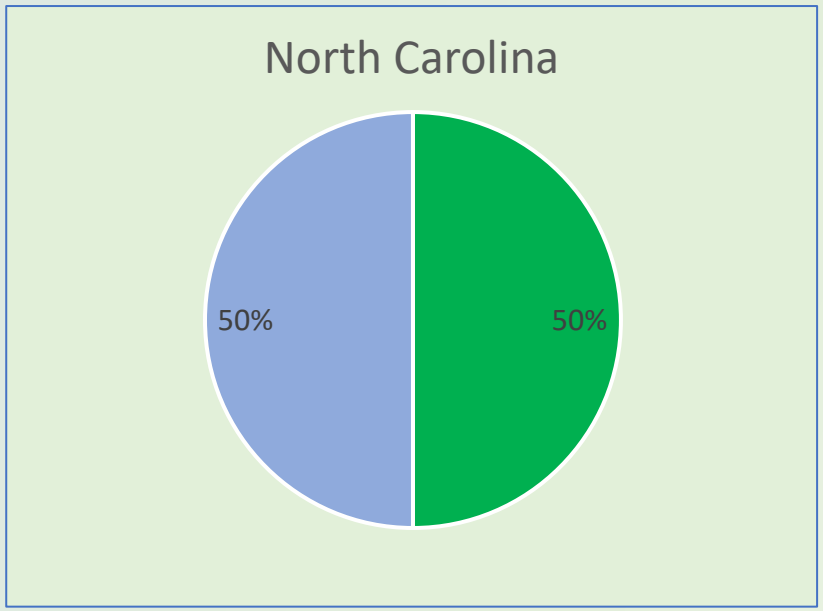
Rapid autologous priming aka autologous circuit priming. Arterial and/or venous lines are back-filled from cannulas, displacing the priming crystalloid with patient's blood and reducing the crystalloid load delivered to the patient at CPB induction.

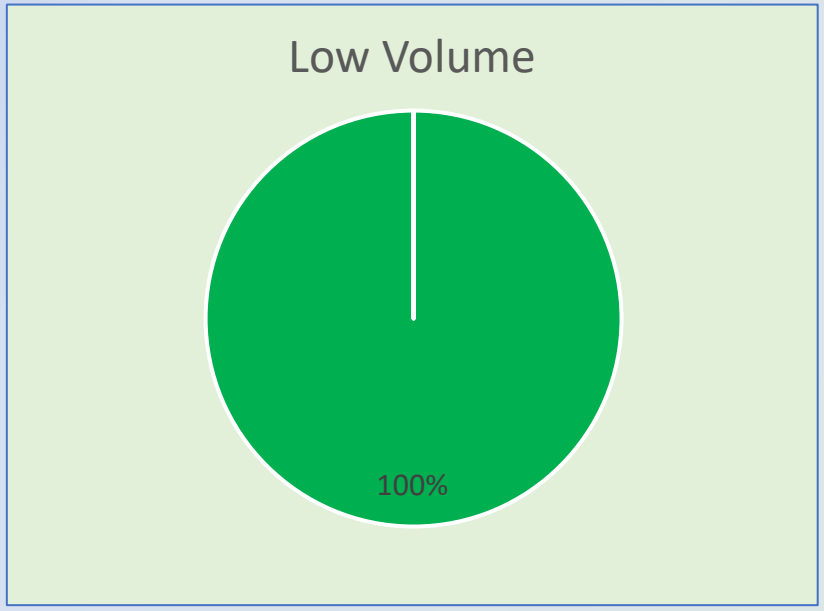


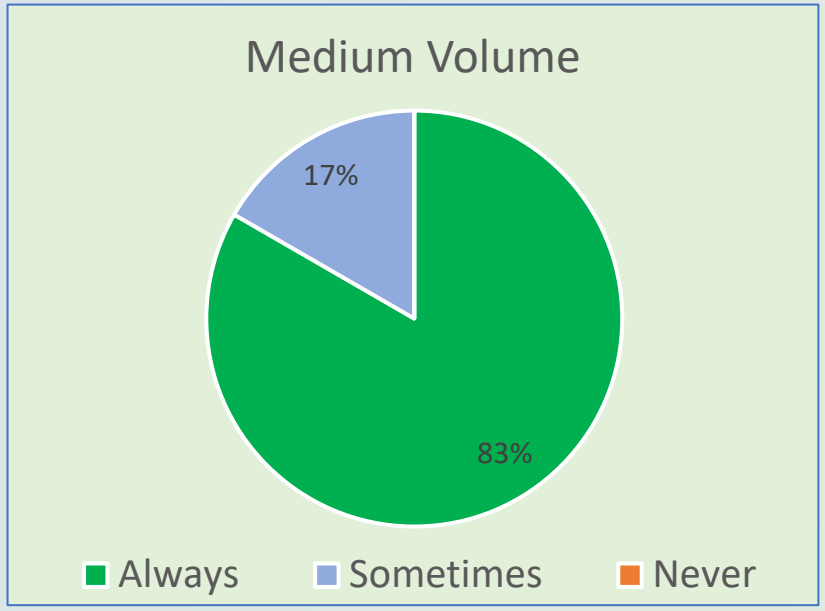
Do you RAP your circuit?

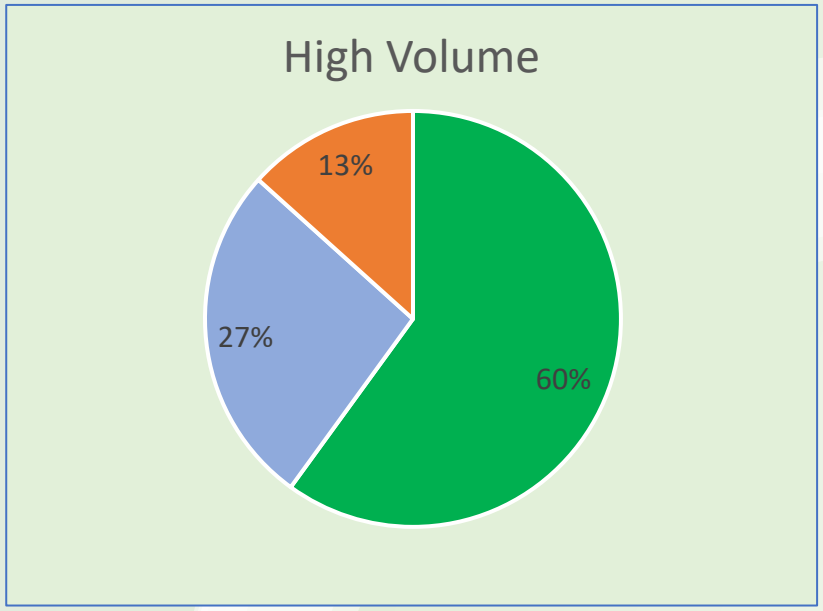








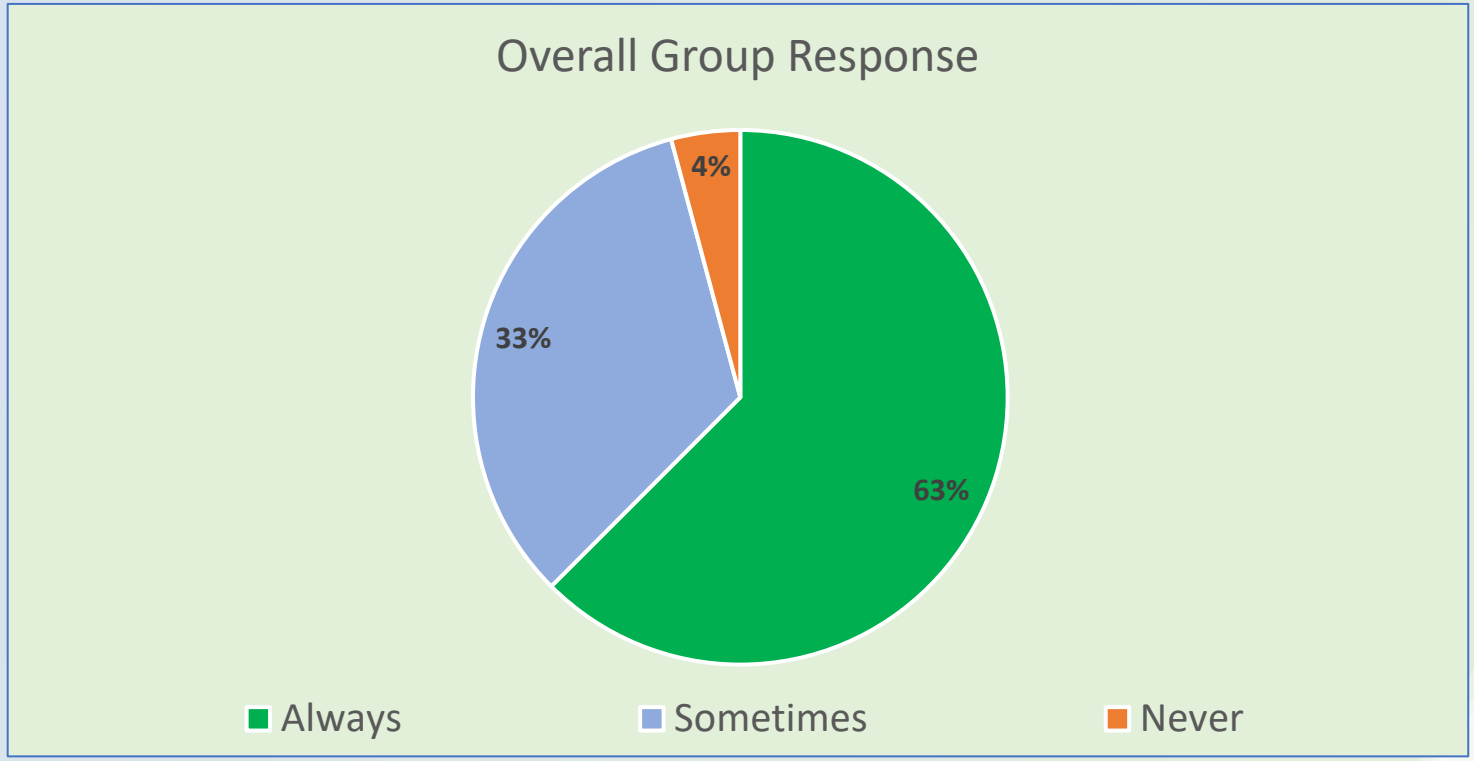




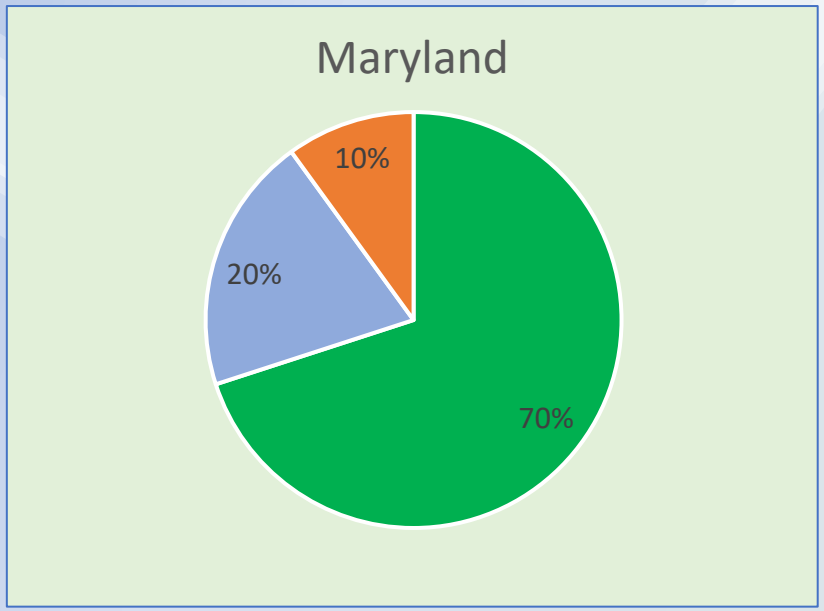
Do you measure cerebral oximetry intraoperatively?

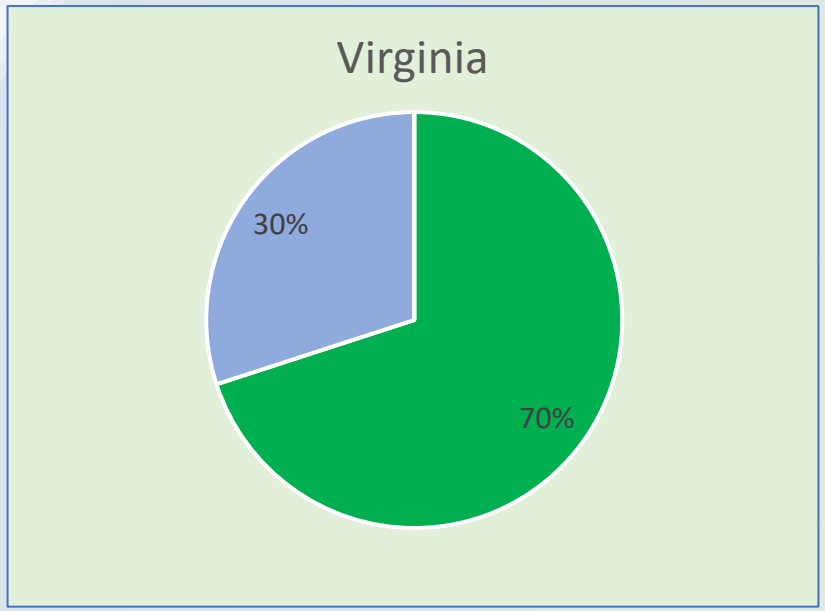
Explanation of Cerebral Oximetry:

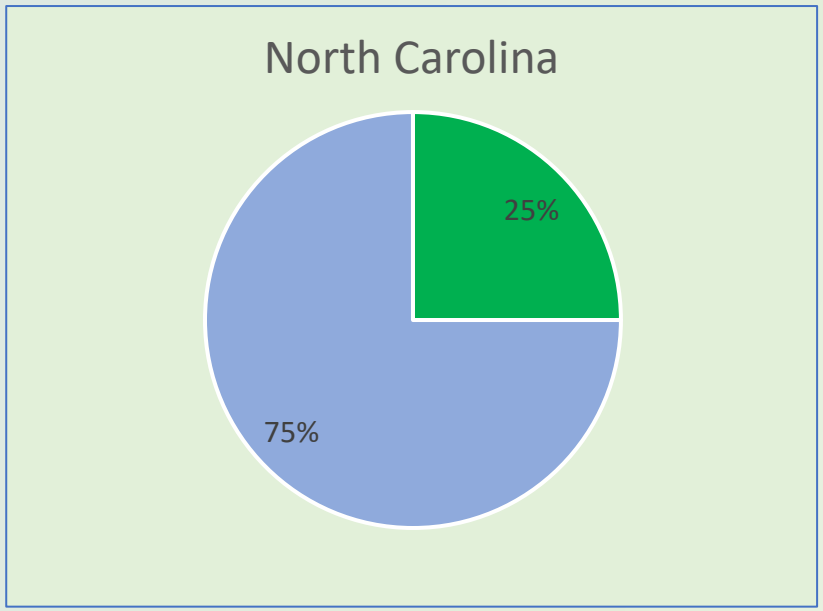
Using near-infrared spectroscopy (NIRS) to measure brain tissue oxygenation.

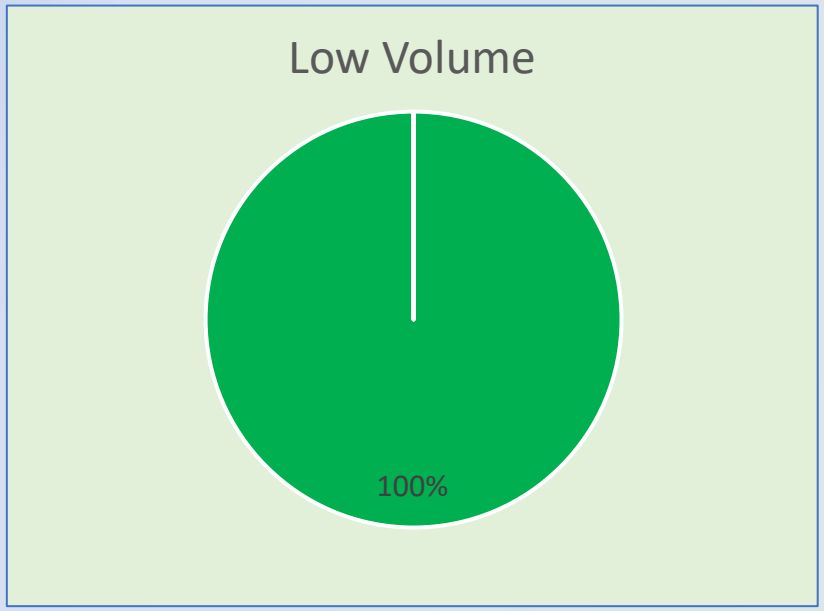


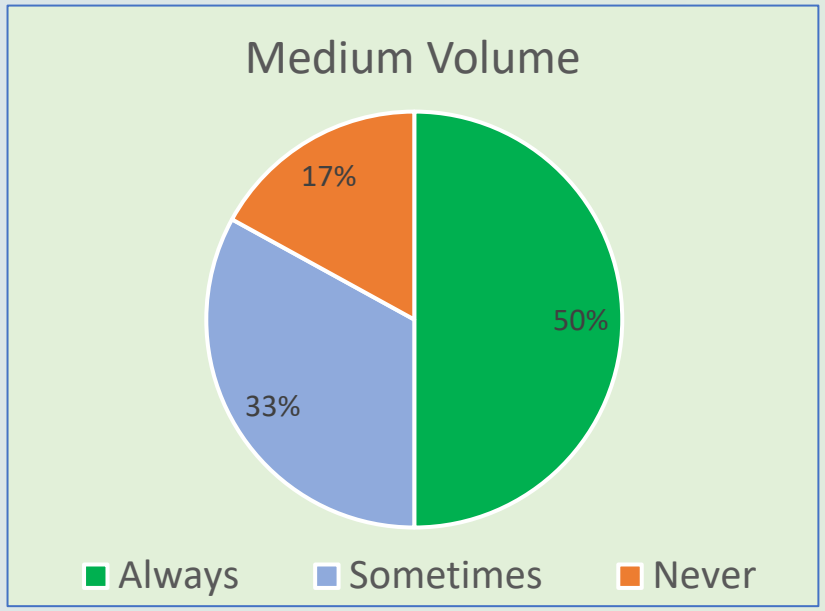
Do you measure cerebral oximetry intraoperatively?

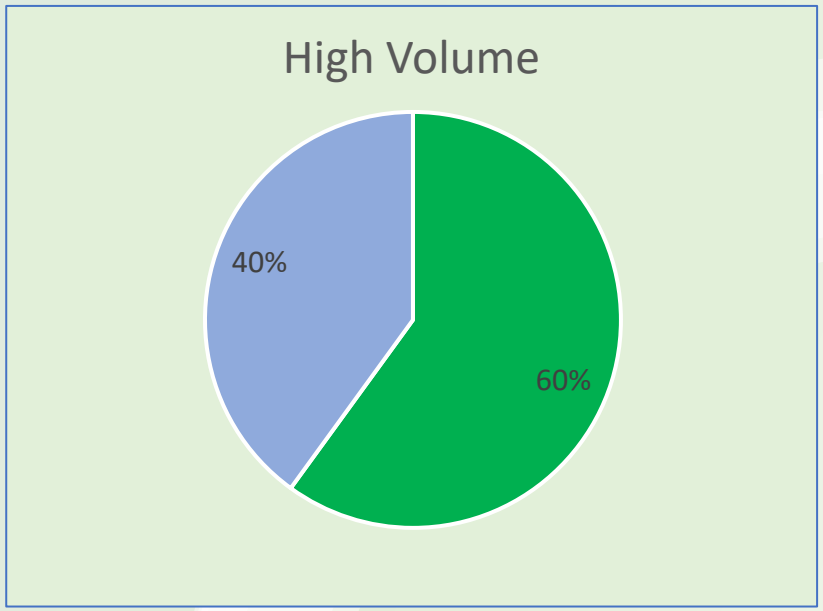








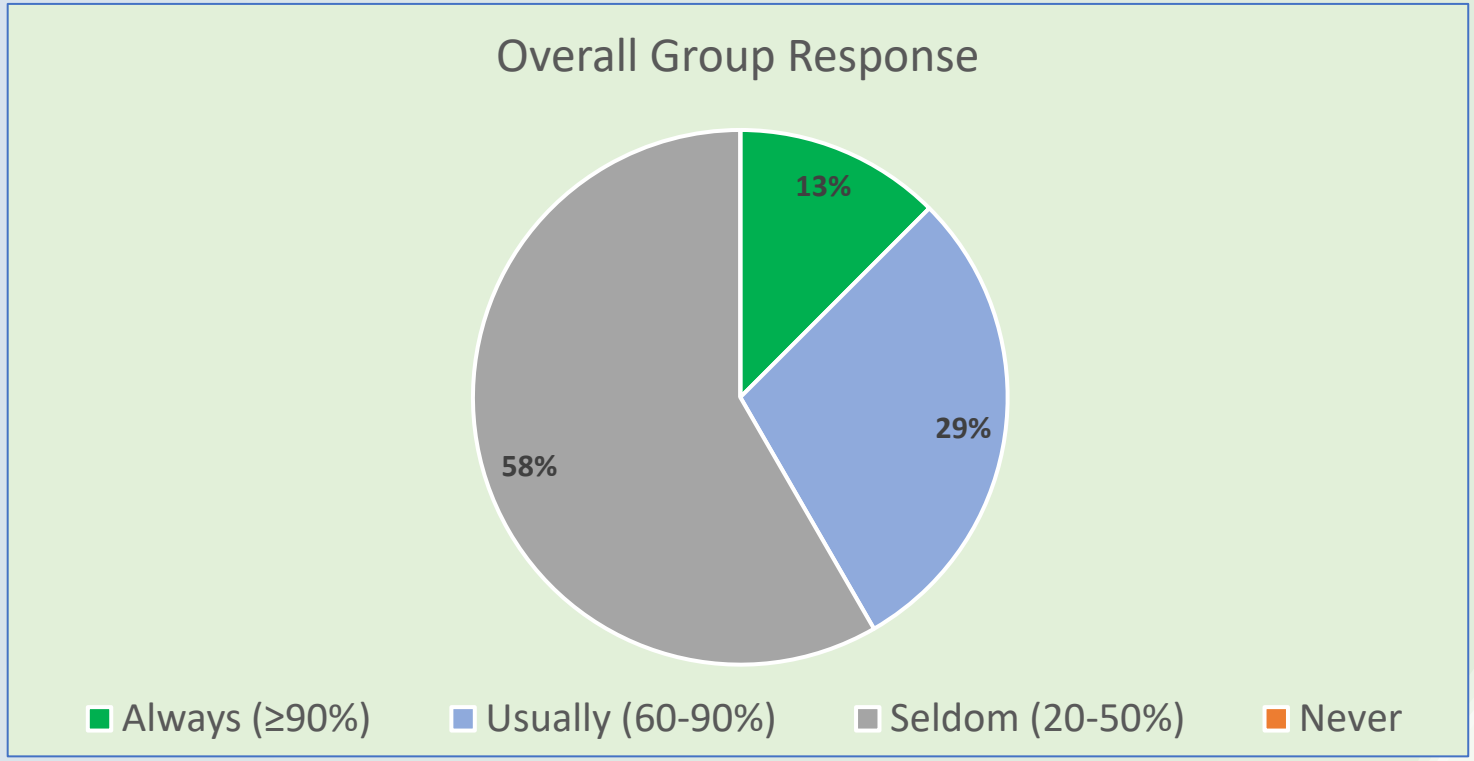




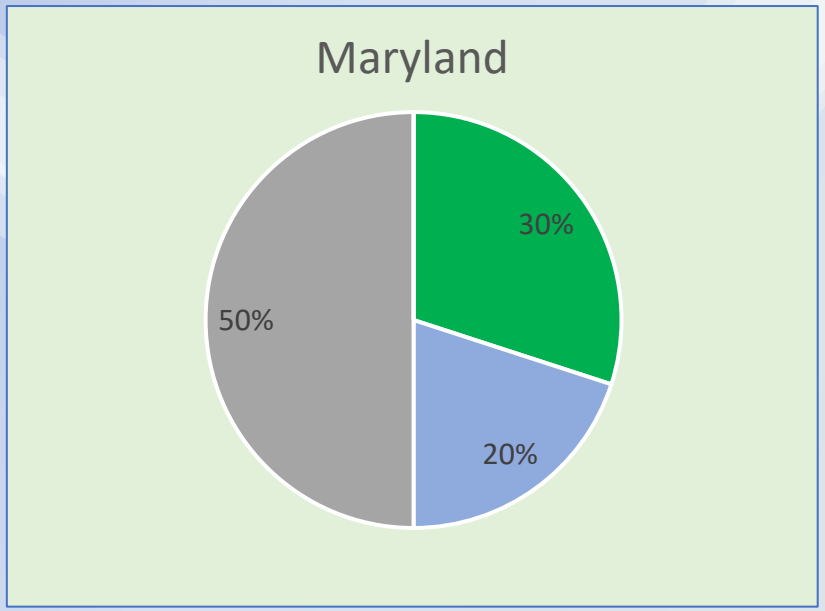
Do you use a hemoconcentrator on bypass?

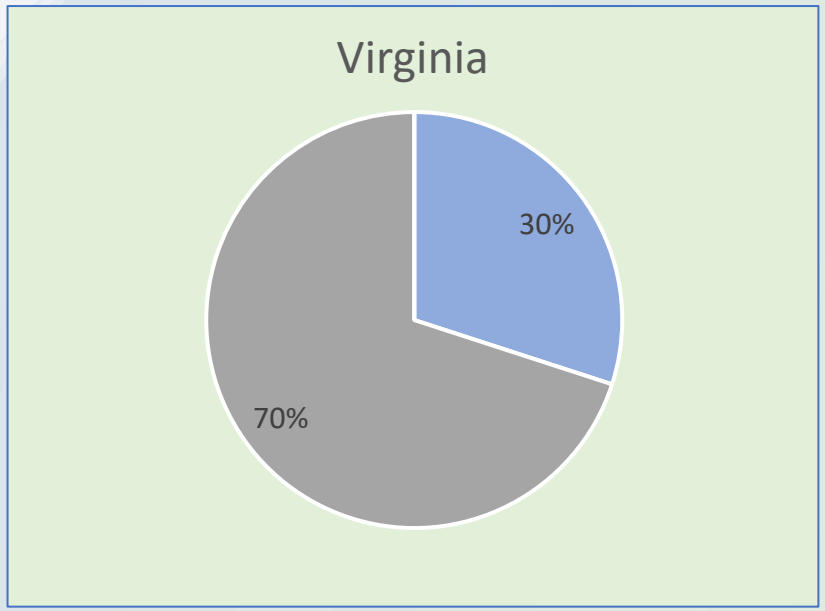
What is a hemoconcentrator?

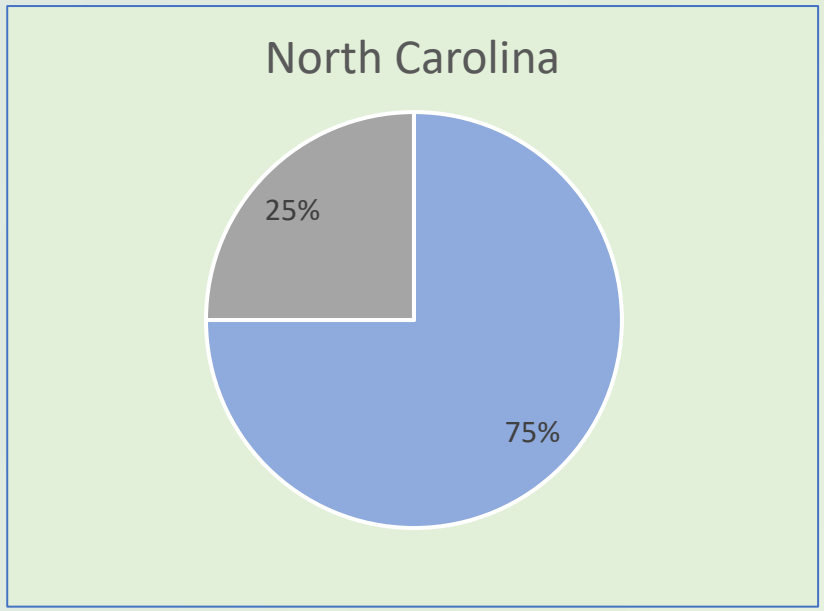
A specialized filter that can be added to CPB circuit to remove plasma, optimizing hematocrit on CPB and possibly decreasing need for allogeneic RBC transfusion.

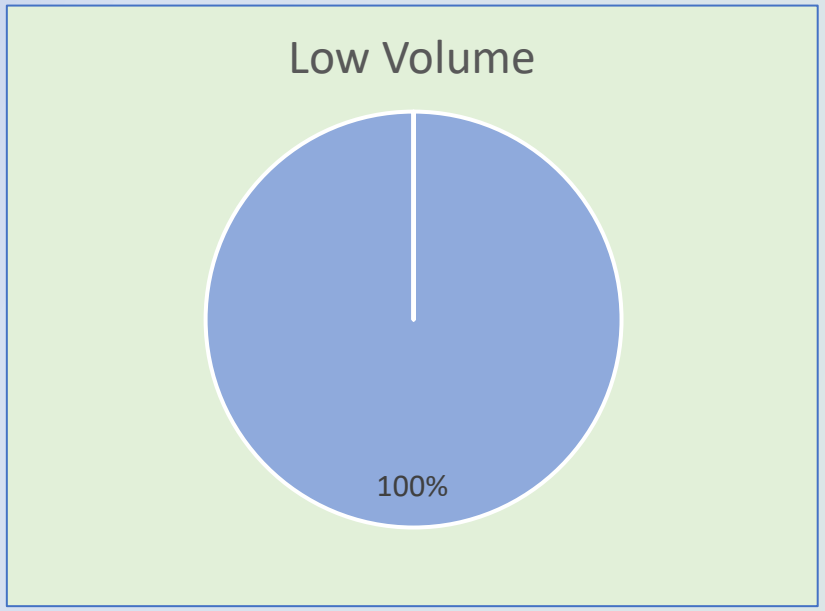


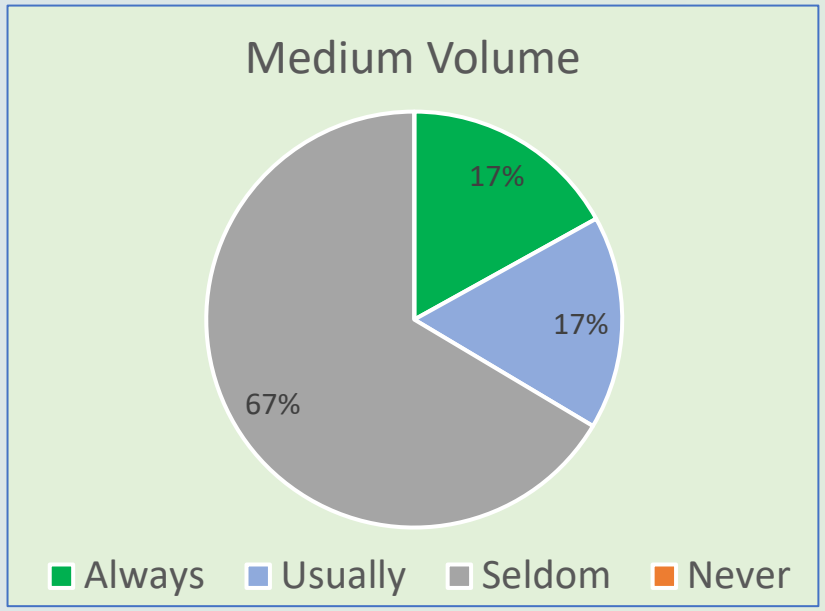
Do you use a hemoconcentrator on bypass?

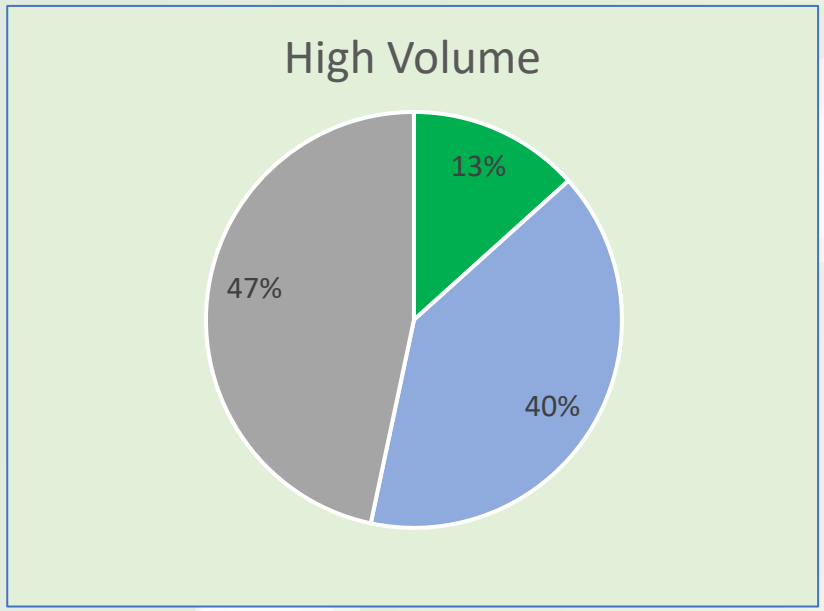








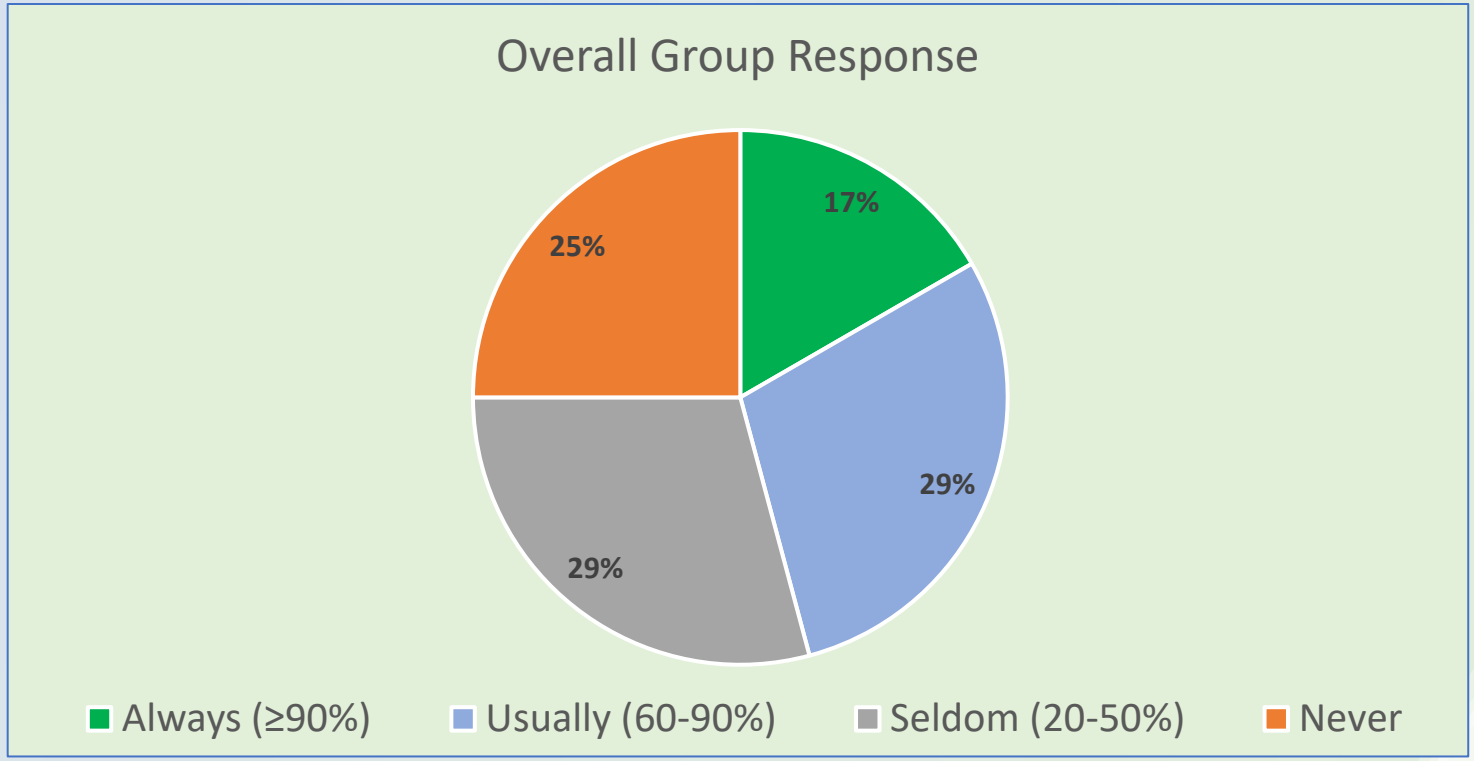




Do you use POC viscoelastic devices in your transfusion algorithm?

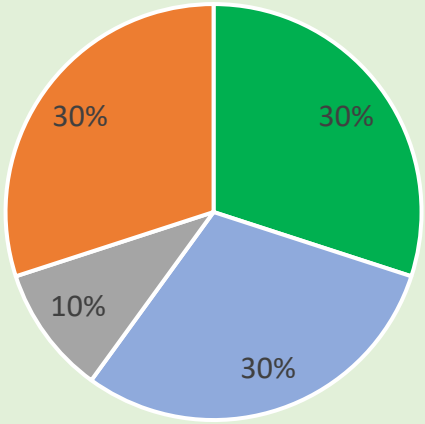
What are POC viscoelastic devices?

TEG, ROTEM, QUANTRA. Viscoelastic testing measures blood clotting in real time. It evaluates the entire coagulation process, including platelet function and fibrinogen function.

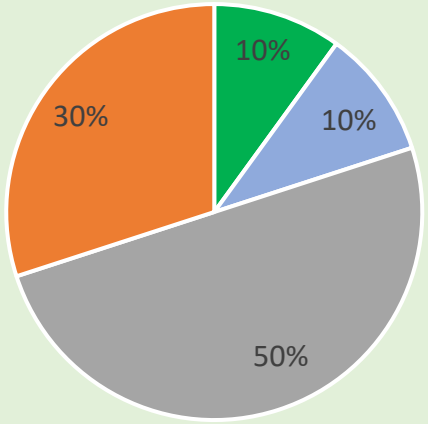


Do you use POC viscoelastic devices in your transfusion algorithm?

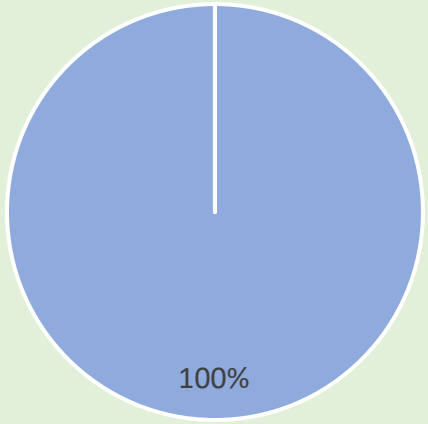
Maryland



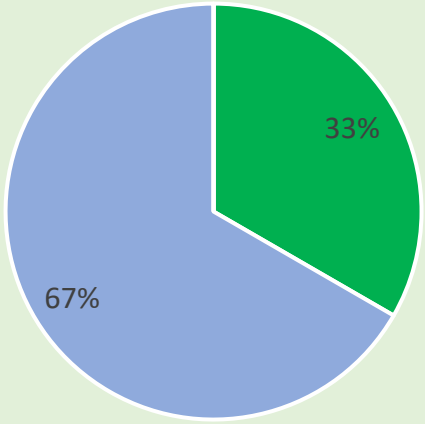
Virginia



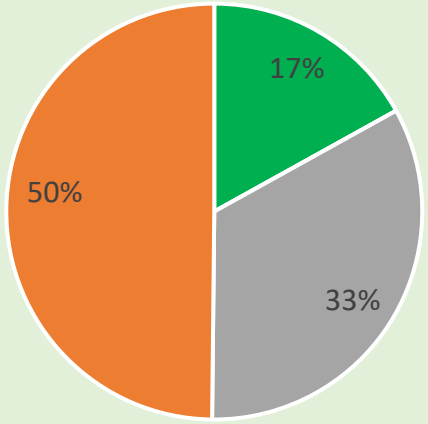
North Carolina



Low Volume

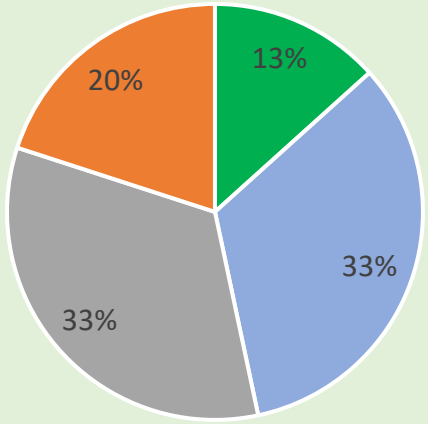


Medium Volume



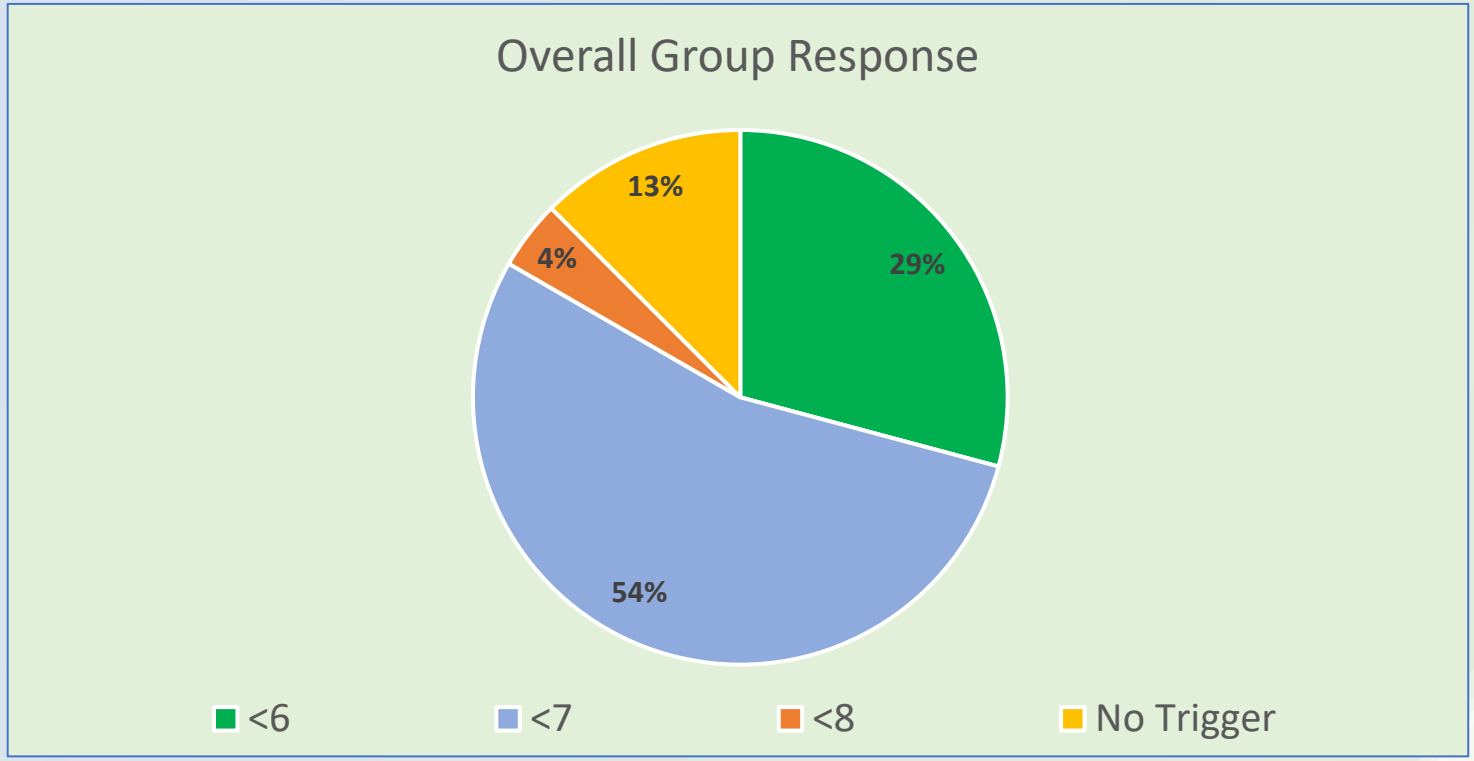
Always Usually Seldom Never

High Volume



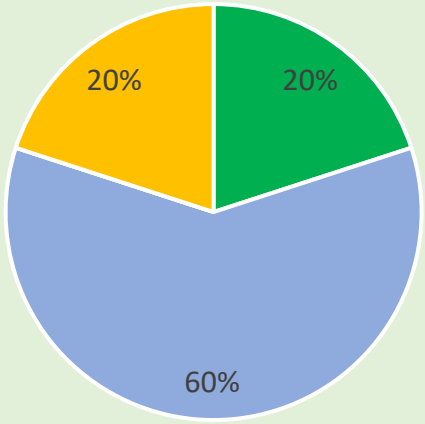
During CPB, our transfusion trigger is …

Discussion: a “trigger” can be interpreted differently at different institutions

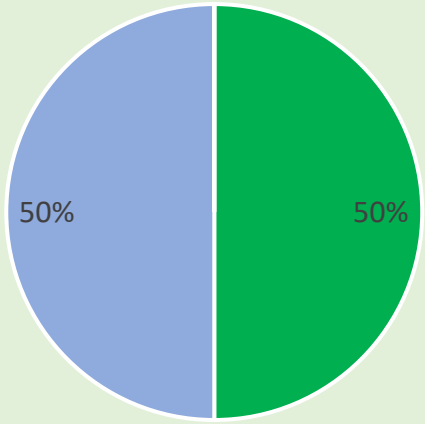


During CPB, our transfusion trigger is …

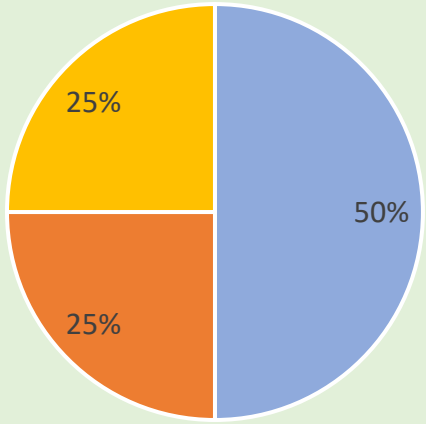
Maryland



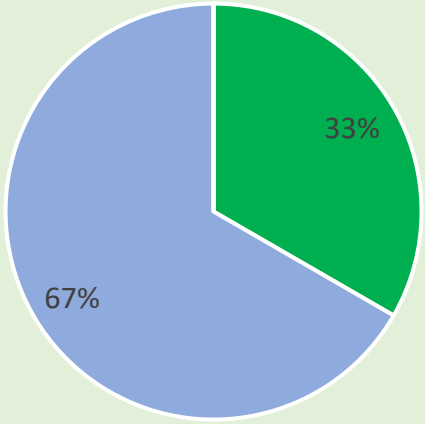
Virginia



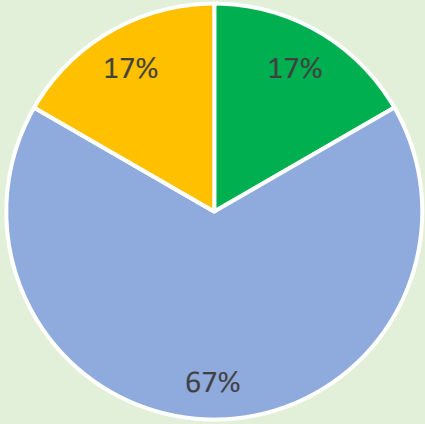
North Carolina



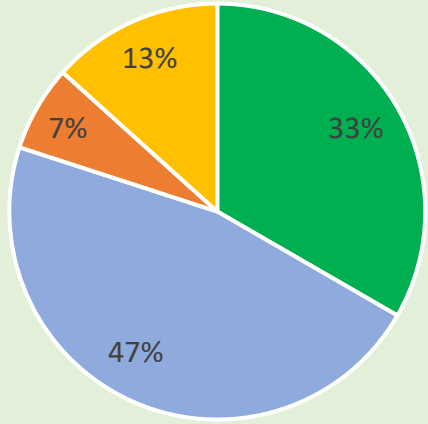
Low Volume



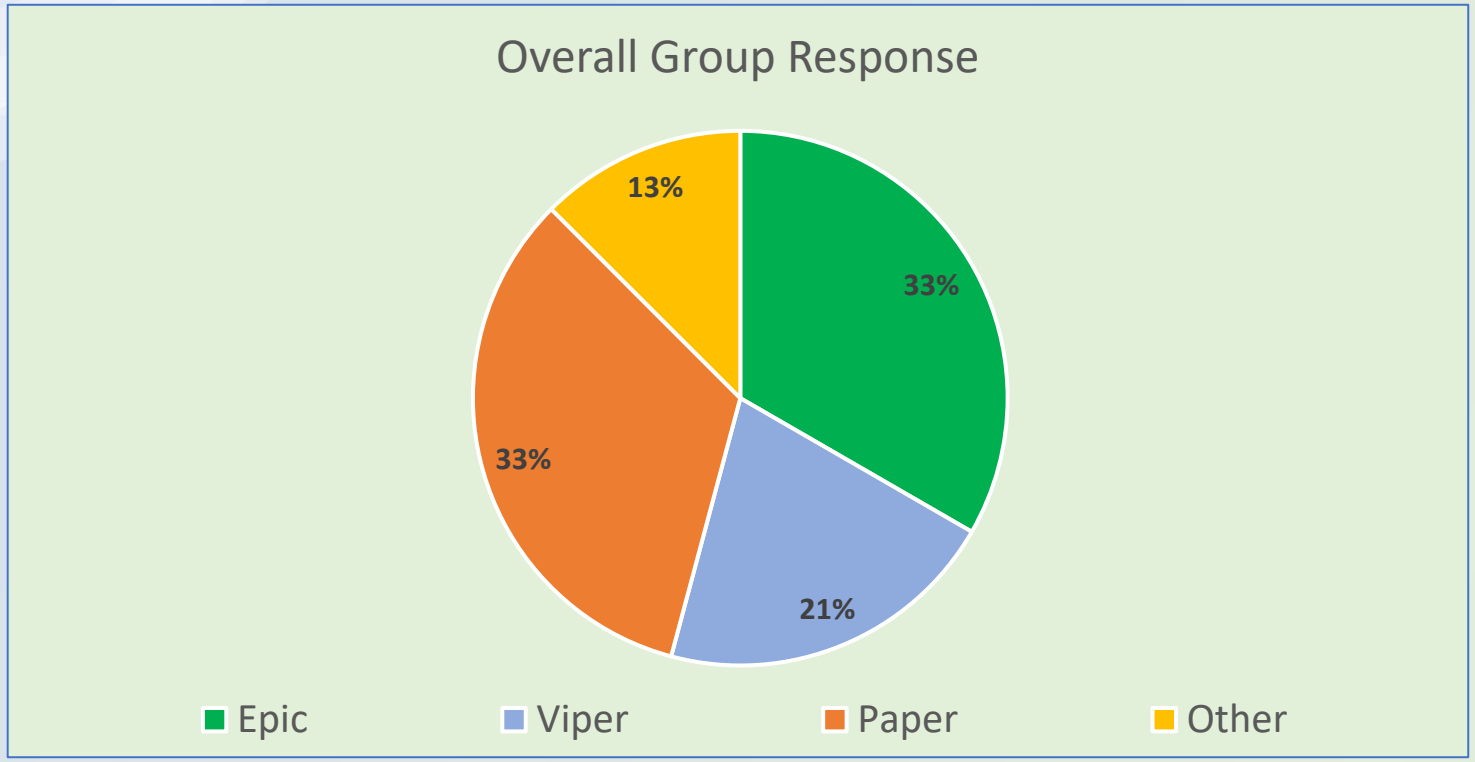
Medium Volume



High Volume

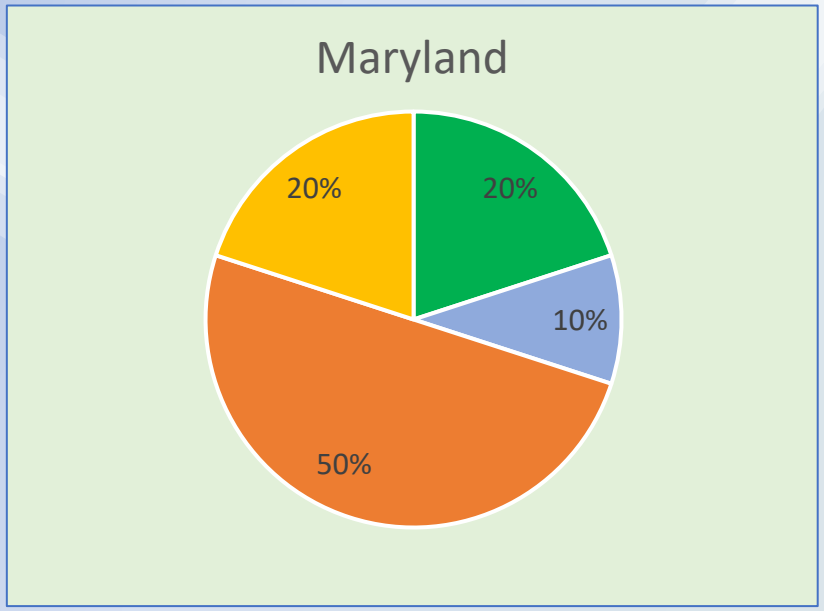


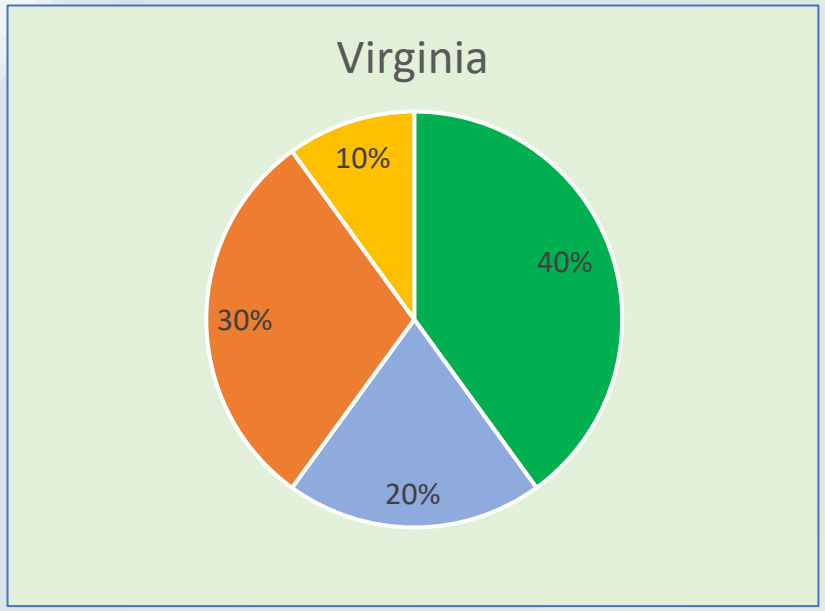
To create CPB record/chart, we use …

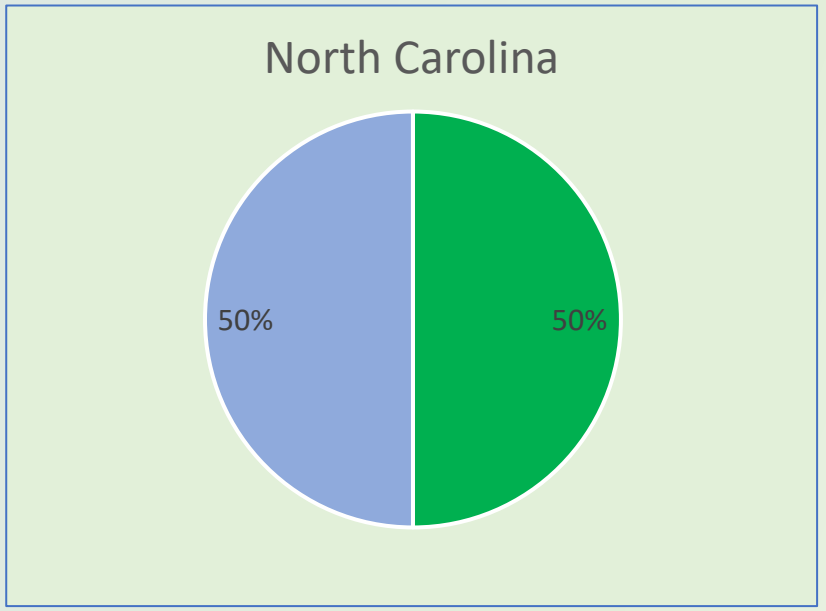


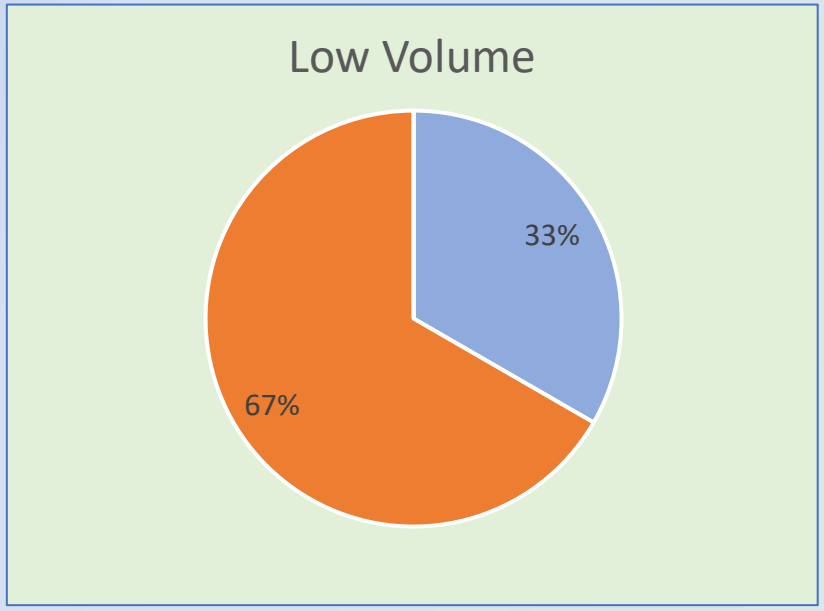
“Other” includes Essenze and Connect.

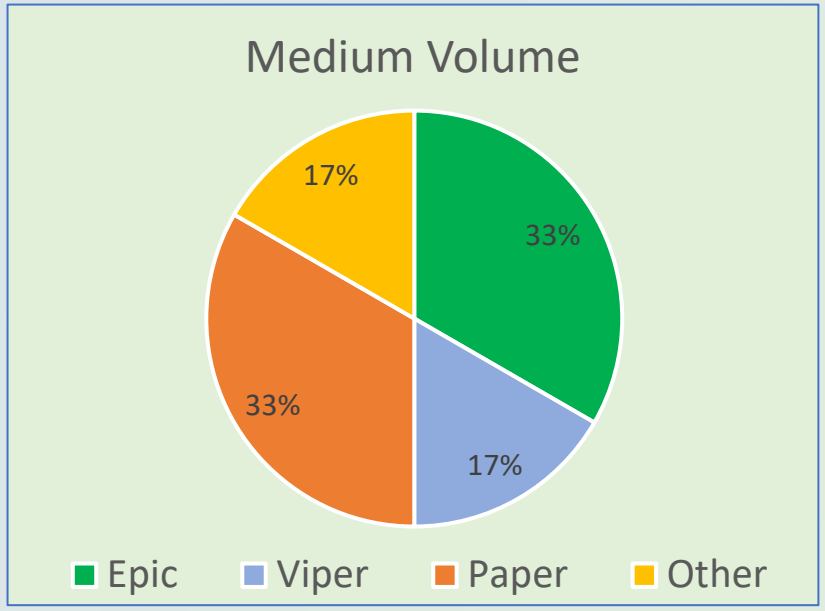
To create CPB record/chart, we use …

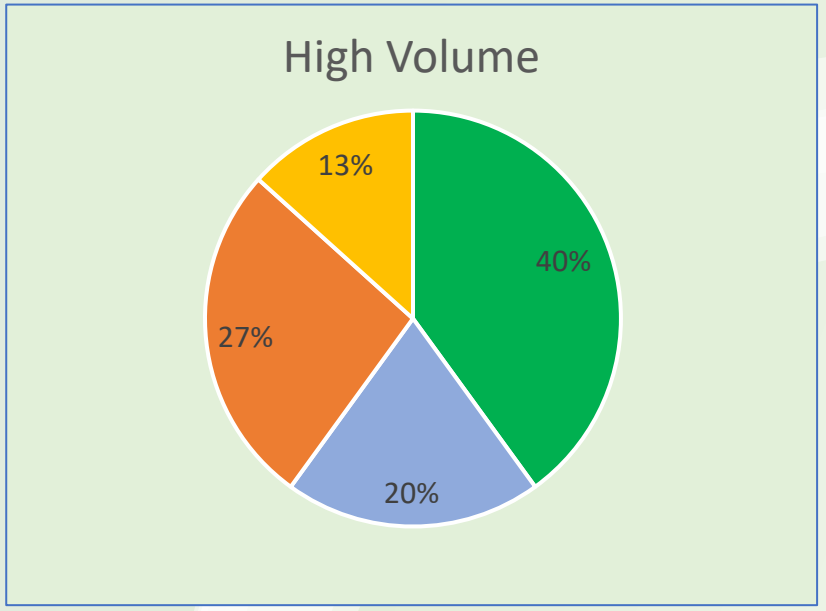




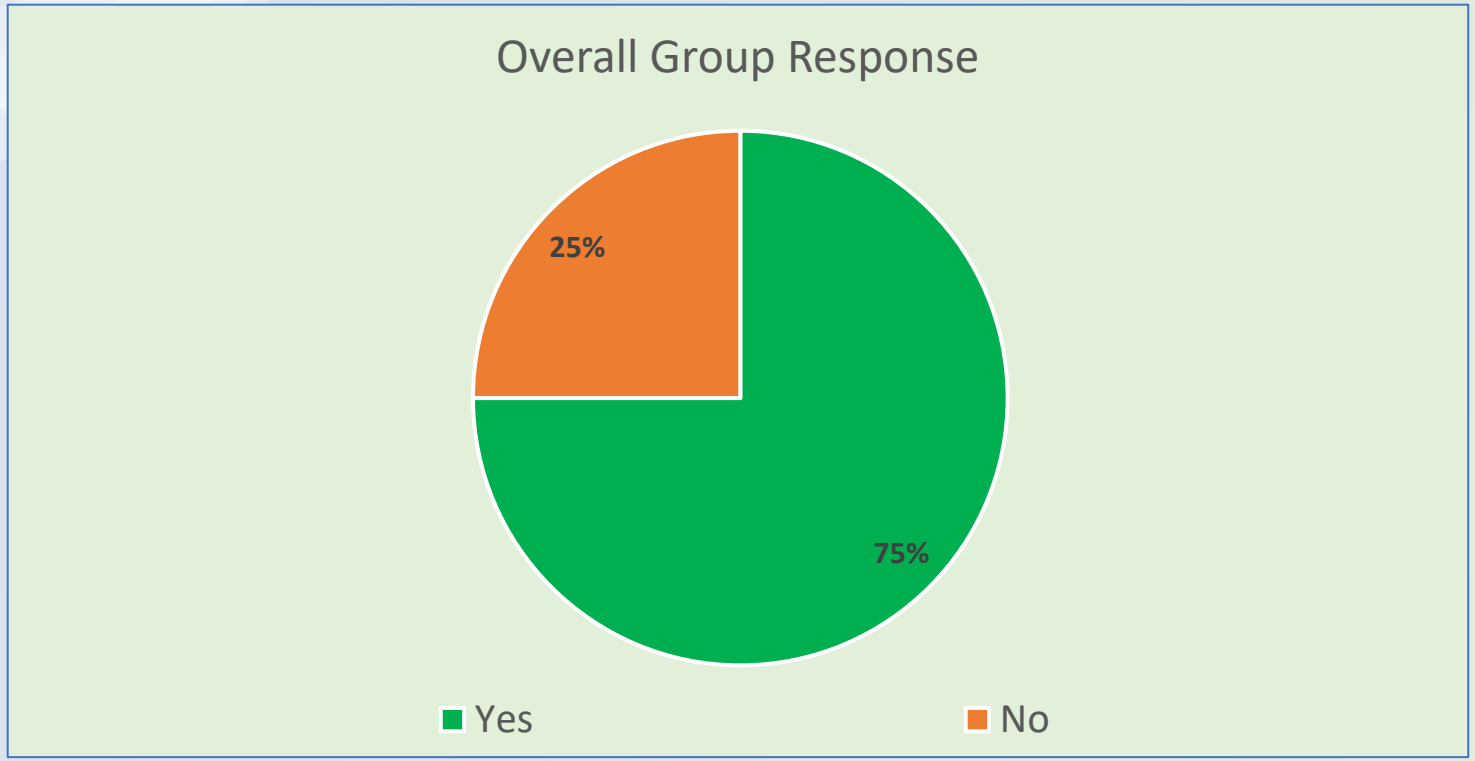




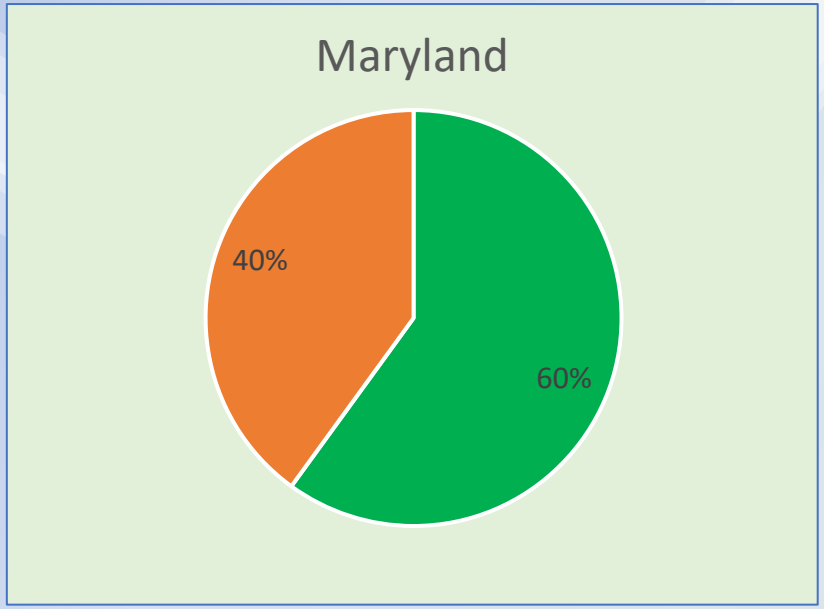


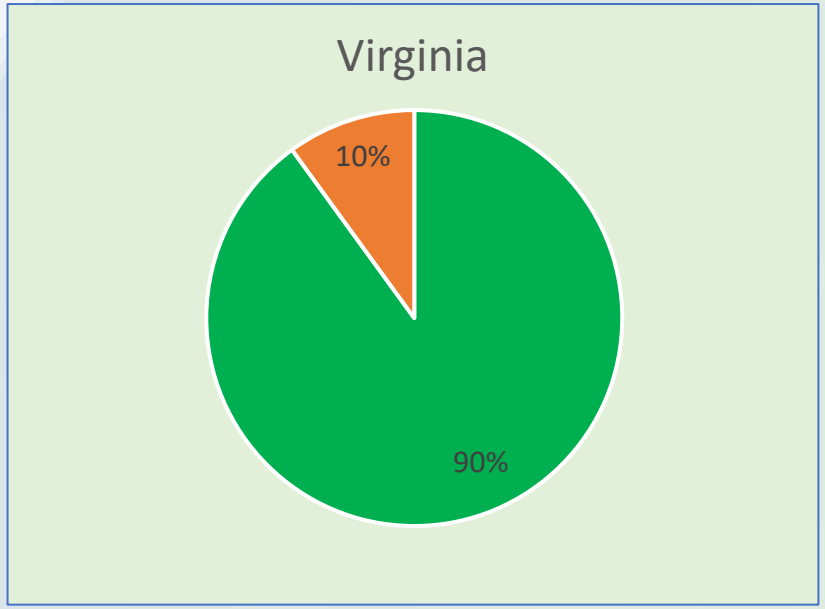


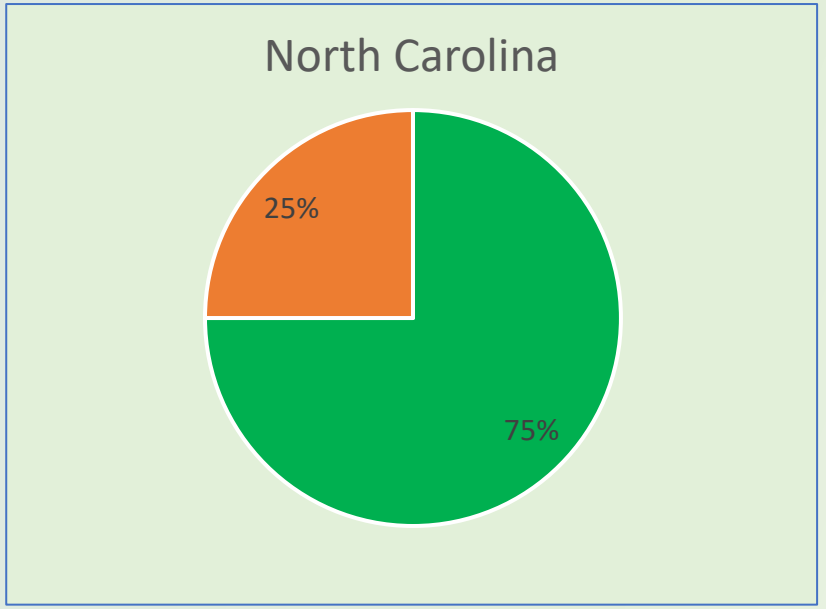
Would your program be willing to participate in data collection for the purpose of developing a regional perfusion database?

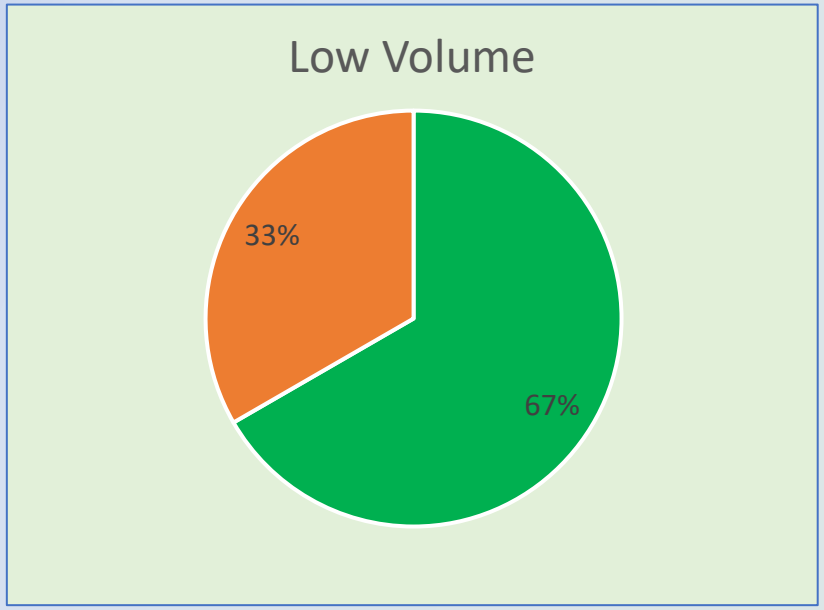


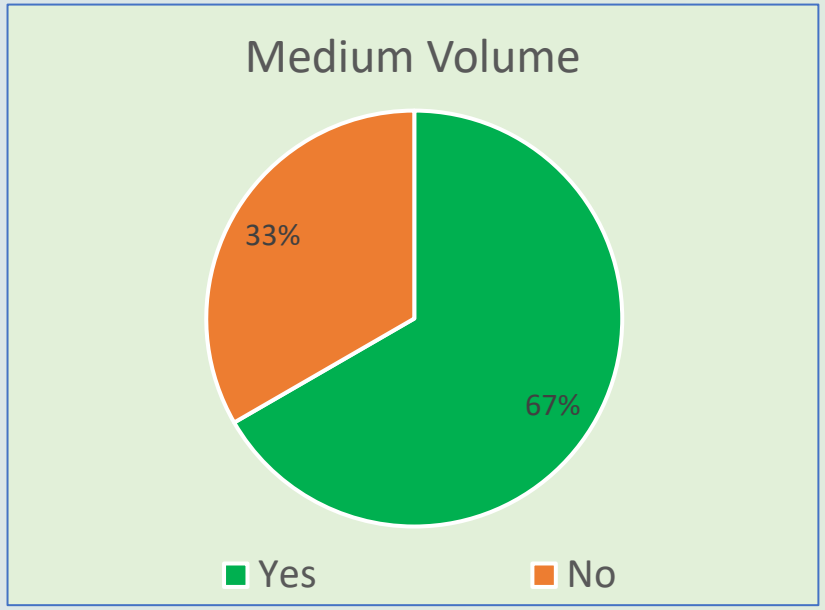
Would your program be willing to participate in data collection for the purpose of developing a regional perfusion database?

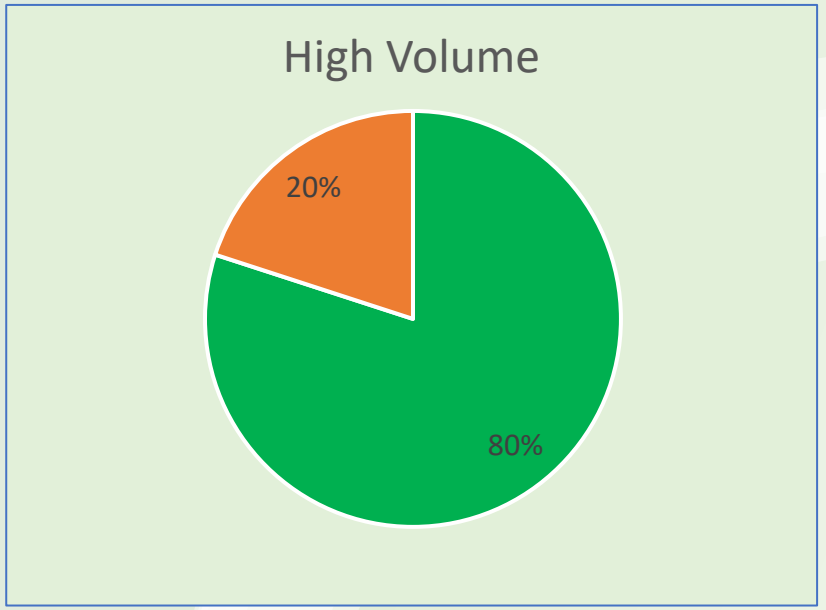












Survey Comparisons

PRACTICE	PCIN 2025 survey	JECT 2020 survey
DO2 measurement		
Always	63%	Yes: 46.5%
Sometimes	25%	29.3% auto, 17.2% man calc
Never	13%	No: 53.4%
RAP		
Always	72%	56.90%
Sometimes	20%	31.10%
Never	8%	12.10%
Cerebral oximetry		
Always	62%	53.40%
Sometimes	32%	37.90%
Never	5%	8.60%

Next Steps…

Continue to meet with GDP Workgroup to pull more useful data

Understand how centers are complying with the influence of standards and guidelines on practices

Find new ways to collaborate between states

Explore a regional data warehouse

Quality Initiatives

Sherri White, MSPOD
VCSQI Quality Improvement Advisor

PULSE

PERFORMANCE | UNITY | LEARNING | STRATEGY | EQUITY

A VCSQI Guide to Achieving Excellence

Transforming Cardiovascular Care to Improve Patient Experience and Value

VCSQI

What Does PULSE Stand For?

- **Performance** - Because high-quality care depends on measurable outcomes, operational excellence, and continuous improvement.
- **Unity** - Improvement happens best when teams, departments, and systems work collaboratively across silos.
- **Learning** - Shared learning drives innovation, adaptation, and reflection on both success and failure.
- **Strategy** - Change requires intentional planning and alignment with organizational goals.
- **Equity** - True quality cannot be achieved unless care is equitable, inclusive, and accessible to all.

Why PULSE?

- Consistent, actionable framework that supports quality improvement across diverse organizations.
- PULSE is designed to move teams into implementation, standardization, and shared learning.
- This tool reflects our commitment to empowering healthcare teams with a structured way to assess, act, and improve together—grounded in collaboration, equity, and measurable outcomes.
- Emphasis on shifting from evaluation to implementation.
- Designed to support continuous quality improvement across all member organizations.

Purpose of the Tool

IDENTIFY STRENGTHS AND IMPROVEMENT OPPORTUNITIES

PROMOTE BEST PRACTICES AND CARE STANDARDIZATION

SUPPORT IMPLEMENTATION OF PROTOCOLS AND EQUITY-DRIVEN STRATEGIES

SERVE AS A SHARED LEARNING FOUNDATION

How It Works

- Assessment is divided into 8 domains (A–H)
  - A. Post-Discharge Care & Readmissions
  - B. Patient Navigation & Scheduling
  - C. Social Drivers of Health
  - D. Cardiac Rehab & Risk Factor Modification
  - E. Surgical Episode Optimization (CABG Only)
  - F. Performance Engagement & Data
  - G. Equity & Access to Care
  - H. VCSQI Protocol Adoption

Score	Definition
0	**No Plans to Implement/Not Started**– No activity, planning, or interest in pursuing this intervention at this time.
1	**In Progress / Under Review** – Early stages of planning, stakeholder engagement, or protocol review.
2	**Partially Implemented / Modified** – A version of the protocol is in place but is not fully standardized or adopted across settings.
3	**Fully Implemented** – The protocol is active, used consistently, embedded in workflows, and monitored for performance.

- Each item scored from 0–3 based on milestone progress
- Optional protocol documentation field
- Helps teams transition from insight to action

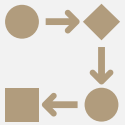
Breakout Session Instructions

- Each group will focus on one key domain from the assessment tool
- Discuss:
  - Current practices in their organizations
  - Challenges faced in implementation
  - Best practices and solutions that could be shared

Discussion Prompts

What strategies has your organization implemented in this area?

What barriers have you encountered?



Are there existing tools, workflows, or partnerships that have been effective?

Group Report-Outs

Each group selects a **representative** to share:

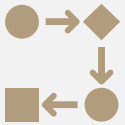
- One key **best practice** discussed
- One major **challenge** faced
- One actionable **recommendation**

Facilitators summarize takeaways

Discussion Prompts

What strategies has your organization implemented in this area?

What barriers have you encountered?



Are there existing tools, workflows, or partnerships that have been effective?

AIM	Milestone Score 0 = Not Started, 1 = In Progress, 2 = Partially Implemented, 3 = Fully Implemented).	0	1	2	3	Score	Protocol Implemented (Y/N/In Progress)
A	**Quicker Recovery After Surgery**						
1	**Same-Day ICU Transfer Protocols**: Has the program implemented protocols to transfer stable CABG patients from the ICU to step-down units earlier to free up ICU beds and reduce costs?						
2	**Early Extubation Protocols**: Are enhanced recovery pathways used to minimize ventilation times and facilitate faster ICU discharge?						
3	**Patient Education**: Are patients provided with counseling about the surgery, recovery expectations, and the importance of mobility and nutrition?						
4	**Early Mobilization**: Are patients encouraged to ambulate within hours or the day after surgery to reduce complications and expedite recovery?						
5	**Optimized Nutrition**: Are nutrient-rich oral intake plans resumed as soon as possible to support healing?						
6	**Pulmonary Care**: Does the program use incentive spirometry and breathing exercises to prevent pulmonary complications?						
7	**Tight Glucose Control**: Are safe glucose levels maintained postoperatively to reduce infection risks?						
8	**Structured Referral Pathways to Cardiac Rehabilitation**: Are referrals to cardiac rehab automated before discharge to ensure timely enrollment?						
9	**Lifestyle Modification Support**: Are patients provided with resources for long-term behavior changes, such as smoking cessation, nutrition counseling, and exercise programs?						

Using the Results

- Tally scores and highlight gaps
- Review domain-level trends to identify strengths and barriers
- Facilitate team discussions to validate scoring and build consensus
- Use results to align improvement priorities with organizational goals
- Support grant applications, reporting, and strategic planning with documented assessments
- Prioritize domains for intervention
- Create an action plan with ownership and timelines

Milestone Score 0 = Not Started, 1 = In Progress, 2 = Partially Implemented, 3 = Fully Implemented).	Readiness Score
Quicker Recovery After Surgery	11%
Fewer Avoidable Hospital and Emergency Department Visits	0%
Shorter Hospital/Post-Acute Care Stays	50%
Smoother Transitions to Primary Care	0%
Lower Costs	40%
More Equitable Health Outcomes	40%
Performance and Staff Engagement	93%
VCSQI Protocol Implementation	27%

What is the CMS TEAM Model?

The TEAM Model is designed to encourage greater alignment among providers by linking payment to quality performance over an episode of care. This initiative builds upon previous CMS bundled payment programs, emphasizing:

- Accountability for episode costs and outcomes
- Enhanced collaboration across care teams
- Data-driven performance monitoring and improvement
- Patient-centered care coordination

Mandatory for Some, Valuable for All: Designed for voluntary participation, yet impactful and applicable across all organizations.

Model Snapshot

Model Type: Mandatory Episode-Based Payment Model

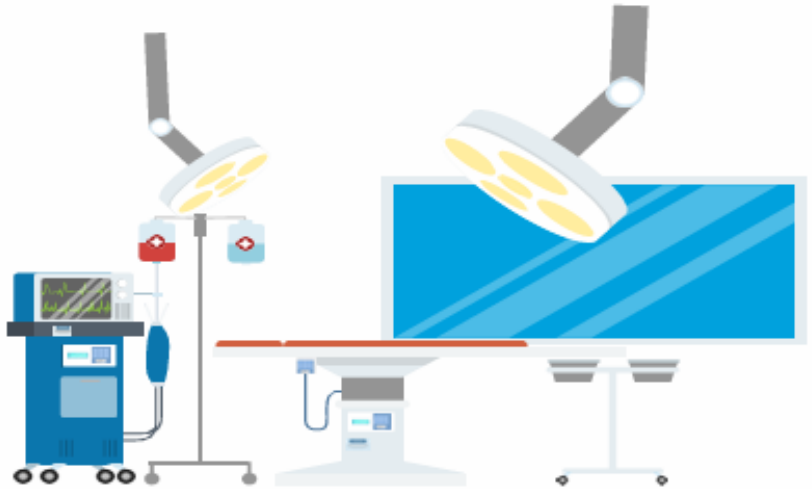
Model Performance Period: Five-year model; five 12-month performance years (PY)

Participants: Acute Care Hospitals in Core-Based Statistical Areas required to participate and eligible Acute Care Hospitals that voluntarily elect to participate in TEAM and are accepted by CMS

Beneficiaries: Traditional Medicare (fee-for-service) beneficiaries with an included episode

Required Episodes:

- Coronary Artery Bypass Graft (CABG)
- Major Bowel Procedure
- Lower Extremity Joint Replacement (LEJR)
- Surgical Hip and Femur Fracture Treatment (SHFFT)
- Spinal Fusion



Episode Components

Participating acute care hospitals will be responsible for overseeing a patient's care from hospital admission or outpatient procedure through 30 days after the individual leaves the hospital, including coordination and communication between providers across all care settings and with the patient and family. An episode includes:

- Inpatient hospital services
- Physician services: specialists and primary care
- Outpatient therapy services
- Skilled nursing facilities
- Home health services
- Clinical laboratory services
- Durable medical equipment
- Medications (Part B drugs and biologicals)
- Hospice

Participants will connect the patient to a primary care provider after they leave the hospital to support continued recovery and positive long-term health outcomes.

VCSQI Support & Integration

- Guidance on interpreting PULSE results and developing action plans
- Opportunities to participate in collaborative learning sessions and quarterly meetings
- Highlighting success stories and best practices from member organizations
  - Real-Time Clinical Decision - Summer Quarterly Meeting
  - Blood Conservation – Fall Quarterly Meeting
  - Patient Panel – Winter Quarterly Meeting
- Benchmarking comparisons
- Coaching and peer learning
- Dashboards and tools to support improvement

Get Started with PULSE

- Visit VCSQI.org/pulse
- Email info@vcsqi.org

AIM	Milestone Score 0 = Not Started, 1 = In Progress, 2 = Partially Implemented, 3 = Fully Implemented).	0	1	2	3	Score
	Quicker Recovery After Surgery					
1	**Same-Day ICU Transfer Protocols**: Has the program implemented protocols to transfer stable CABG patients from the ICU to step-down units earlier to free up ICU beds and reduce costs?					
2	**Early Extubation Protocols**: Are enhanced recovery pathways used to minimize ventilation times and facilitate faster ICU discharge?					
3	**Patient Education**: Are patients provided with counseling about the surgery, recovery expectations, and the importance of mobility and nutrition?					
4	**Early Mobilization**: Are patients encouraged to ambulate within hours or the day after surgery to reduce complications and expedite recovery?					
5	**Optimized Nutrition**: Are nutrient-rich oral intake plans resumed as soon as possible to support healing?					
6	**Pulmonary Care**: Does the program use incentive spirometry and breathing exercises to prevent pulmonary complications?					
7	**Tight Glucose Control**: Are safe glucose levels maintained postoperatively to reduce infection risks?					

Protocol Implementation Tool: Measuring Impact on Clinical Outcomes

Measuring Impact on Clinical Outcomes

Advancing Data-Driven Improvement

- Clinical protocols are designed to improve patient outcomes — but measuring their real-world impact can be complex.
- Adoption timelines and implementation experiences vary across centers.
- There's a growing need for a standardized, transparent way to assess performance over time.
- This tool empowers teams to:
  - Understand trends before and after implementation.
  - Compare outcomes across adopters and non-adopters.
  - Support ongoing quality improvement with meaningful insights.

What This Tool Does

- Tracks Pre- and Post-Implementation Outcomes by center.
- Distinguishes adopters from non-adopters.
- Calculates:
  - Pre-/Post-Averages
  - % Impact
  - Cumulative Average
- Enables qualitative interpretation and visual comparison.

Methodology

- Adopters: Pre/Post averages based on Year Implemented.
- Non-Adopters: Pre/Post averages based on protocol approval year (e.g., 2021).
- Post-Average includes the Year Implemented to allow for delayed impact (6–12 months).
- % Impact = (Post Avg − Pre Avg) / Pre Avg × 100.
- Handles null or zero values safely with error checks.

The Tool in Action

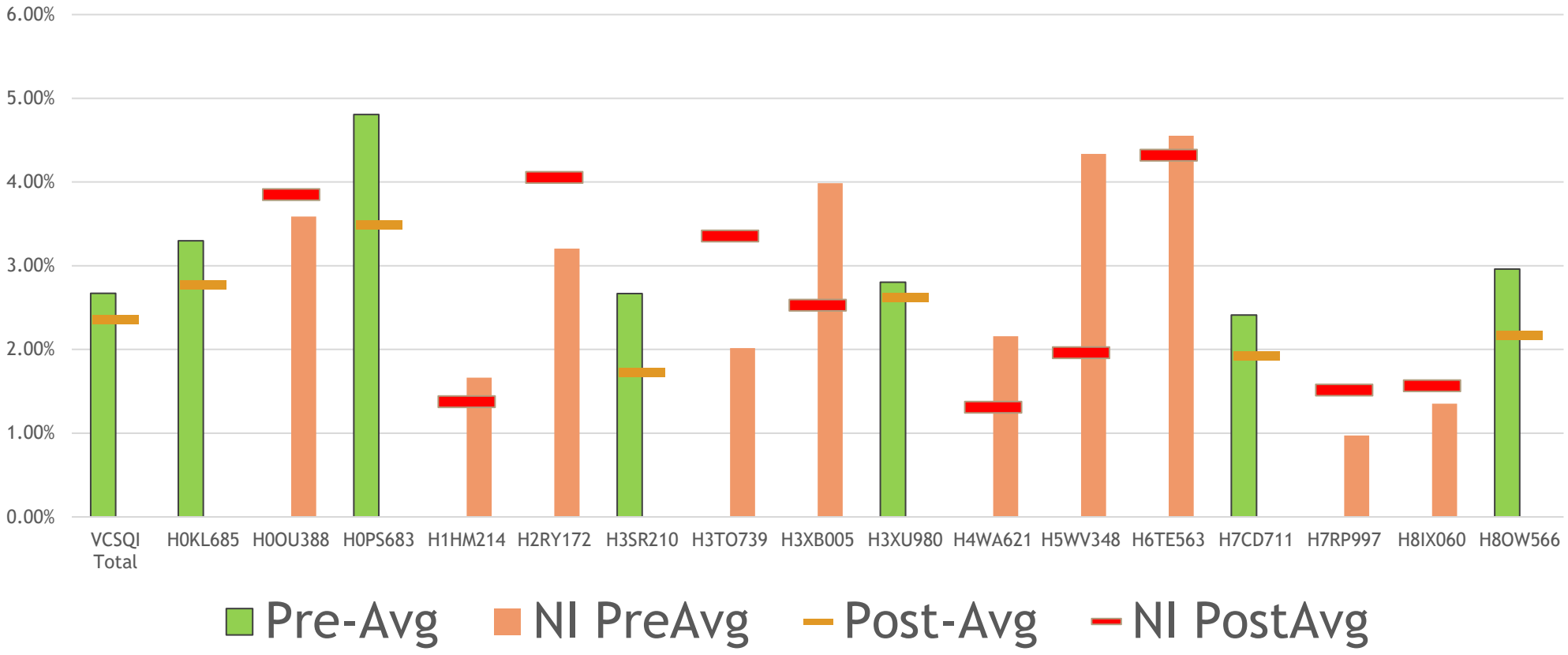
Example: Renal Failure/AKI Outcomes

- Focused view of one key clinical metric.
- Shows average improvement for adopters vs. non-adopters.
- Supports evidence-based advocacy for wider implementation.

PROTOCOL IMPLEMENTATION TOOL

Renal Failure by Year: CAB Only, 2018-2024									ADOPTERS			Cum. Avg	NON-ADOPTERS		
Member	Year Implemented	2018	2019	2020	2021	2022	2023	Q1-Q2 2024	Pre-Avg	Post-Avg	% Impact		Pre-Avg	Post-Avg	% Impact
VCSQI Total	2021	2.54%	2.57%	2.90%	2.96%	2.02%	2.29%	2.16%	2.67%	2.36%	-11.70%	*2.49%*			
H0KL685	2021	4.98%	1.45%	3.46%	2.65%	2.30%	3.37%	2.78%	3.30%	2.78%	-15.82%	*3.00%*			
H0OU388		2.61%	5.71%	2.44%	3.31%	3.59%	4.64%	4.94%				*3.89%*	3.6%	*3.85%*	7.25%
H0PS683	2021	3.87%	4.17%	6.38%	7.69%	2.48%	1.65%	2.13%	4.81%	3.49%	-27.44%	*4.05%*			
H2RY172		1.22%	3.51%	4.88%	5.60%	0.76%	5.80%	1.72%				*3.36%*	3.2%	*4.05%*	26.53%
H3SR210	2021	0.84%	1.90%	5.26%	4.62%	1.20%	1.09%	0.00%	2.67%	1.73%	-35.22%	*2.13%*			
H3TO739		2.78%	0.49%	2.78%	1.51%	4.35%	4.20%	4.65%				*2.97%*	2.0%	*3.35%*	66.28%
H3XB005		3.09%	4.02%	4.85%	4.27%	1.39%	1.92%	5.77%				*3.62%*	4.0%	*2.53%*	-36.62%
H3XU980	2023	0.00%	2.35%	4.88%	3.28%	3.51%	3.74%	1.49%	2.80%	2.62%	-6.74%	*2.75%*			
H4WA621		2.47%	4.00%	0.00%	3.92%	0.00%	0.00%	3.13%				*1.93%*	2.2%	*1.31%*	-39.41%
H5WV348		4.42%	4.44%	4.15%	2.43%	0.89%	2.56%	2.10%				*3.00%*	4.3%	*1.96%*	-54.80%
H6TE563		1.90%	5.00%	6.76%	4.55%	5.43%	2.97%	2.00%				*4.09%*	4.6%	*4.32%*	-5.20%
H7CD711	2021	2.68%	2.07%	2.48%	2.88%	1.81%	2.15%	0.86%	2.41%	1.93%	-20.12%	*2.13%*			
H7RP997		0.80%	1.62%	0.50%	2.33%	1.40%	0.81%	1.66%				*1.30%*	1.0%	*1.51%*	55.48%
H8IX060		1.86%	0.66%	1.54%	1.94%	1.64%	1.11%	1.18%				*1.42%*	1.4%	*1.56%*	15.52%
H8OW566	2021	3.41%	3.95%	1.52%	2.46%	2.29%	1.71%	2.20%	2.96%	2.17%	-26.86%	*2.51%*			
									3.09%	**2.44%**	**-20.56%**	**2.58%**	**2.61%**	**2.38%**	**-2.91%**

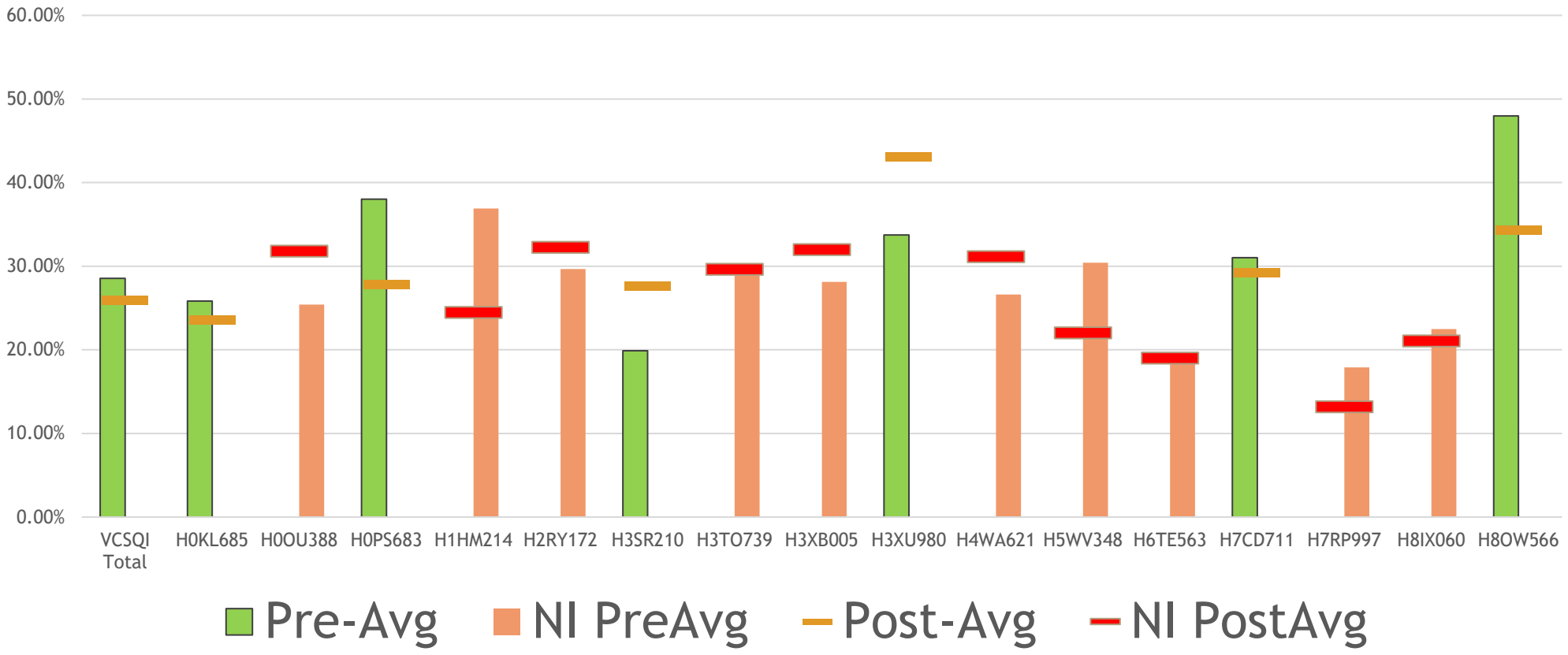
Comparison of Pre- and Post-Average Outcomes: Implemented vs. Not Implemented (Renal Failure)



PROTOCOL IMPLEMENTATION TOOL

AKI by Year: CAB Only, 2018-2024									ADOPTERS				NON-ADOPTERS		
Member	Year Implemented	2018	2019	2020	2021	2022	2023	Q1-Q2 2024	Pre-Avg	Post-Avg	% Impact	Cum. Avg	Pre-Avg	Post-Avg	% Impact
VCSQI Total	2021	29.19%	28.10%	28.31%	27.44%	25.05%	24.97%	26.12%	28.53%	25.90%	-9.25%	*2.49%*			
H0KL685	2021	21.35%	27.17%	29.00%	26.46%	21.66%	22.85%	23.15%	25.84%	23.53%	-8.94%	*3.00%*			
H0OU388		31.37%	22.14%	22.76%	31.79%	31.74%	31.79%	25.93%			#N/A	*3.89%*	25.4%	*31.77%*	24.98%
H0PS683	2021	35.48%	38.19%	40.43%	39.32%	26.45%	24.18%	21.28%	38.03%	27.81%	-26.89%	*4.05%*			
H2RY172		24.39%	27.19%	37.40%	36.80%	28.03%	31.88%	31.03%			#N/A	*3.36%*	29.7%	*32.24%*	8.69%
H3SR210	2021	14.29%	19.05%	26.32%	26.15%	30.12%	34.78%	19.51%	19.89%	27.64%	38.99%	*2.13%*			
H3TO739		30.56%	30.58%	28.89%	23.62%	33.70%	31.47%	32.56%			#N/A	*2.97%*	30.0%	*29.60%*	-1.38%
H3XB005		32.72%	20.11%	31.52%	32.93%	34.72%	28.21%	34.62%			#N/A	*3.62%*	28.1%	*31.95%*	13.65%
H3XU980	2023	31.33%	37.65%	32.93%	35.25%	31.58%	45.79%	40.30%	33.75%	43.05%	27.55%	*2.75%*			
H4WA621		23.46%	30.00%	26.42%	19.61%	53.13%	20.63%	31.25%			#N/A	*1.93%*	26.6%	*31.12%*	16.89%
H5WV348		35.91%	26.67%	28.63%	31.58%	16.44%	17.95%	21.68%			#N/A	*3.00%*	30.4%	*21.99%*	-27.67%
H6TE563		18.10%	17.50%	20.27%	19.70%	18.48%	18.81%	24.00%			#N/A	*4.09%*	18.6%	*19.00%*	2.00%
H7CD711	2021	31.42%	32.71%	28.96%	29.71%	28.23%	29.08%	29.89%	31.03%	29.23%	-5.81%	*2.13%*			
H7RP997		23.40%	16.67%	13.65%	15.43%	12.18%	11.90%	17.43%			#N/A	*1.30%*	17.9%	*13.17%*	-26.45%
H8IX060		21.74%	21.85%	23.85%	20.65%	21.31%	21.11%	17.65%			#N/A	*1.42%*	22.5%	*21.02%*	-6.48%
H8OW566	2021	51.14%	49.01%	43.73%	36.49%	37.16%	31.62%	31.87%	47.96%	34.29%	-28.51%	*2.51%*			
									32.15%	**30.20%**	**-1.84%**	**2.58%**	**25.85%**	**25.16%**	**-1.58%**

Comparison of Pre- and Post-Average Outcomes: Implemented vs. Not Implemented (AKI)



Interpreting the Data

IDENTIFY HIGH- AND LOW-PERFORMING CENTERS.

USE RESULTS TO GUIDE RESOURCE SUPPORT OR TARGETED QI.

TRACK TRENDS AND MEASURE PROGRESS CONSISTENTLY OVER TIME.

Key Takeaways

Protocol implementation is associated with measurable outcome improvements.

Post-implementation impact takes time — we account for that in this model.

This tool offers a standardized, data-driven approach to evaluating protocol effectiveness.

Thank You

- Distribute tool to centers for review and use.
- Incorporate into performance reports and QI workflows
- We welcome your feedback and questions.
- Let's discuss how to maximize the value of this tool across our network.
- Sherri - Sherri@VCSQI.org

Thank You!