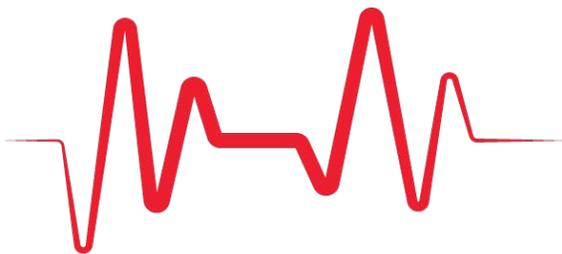
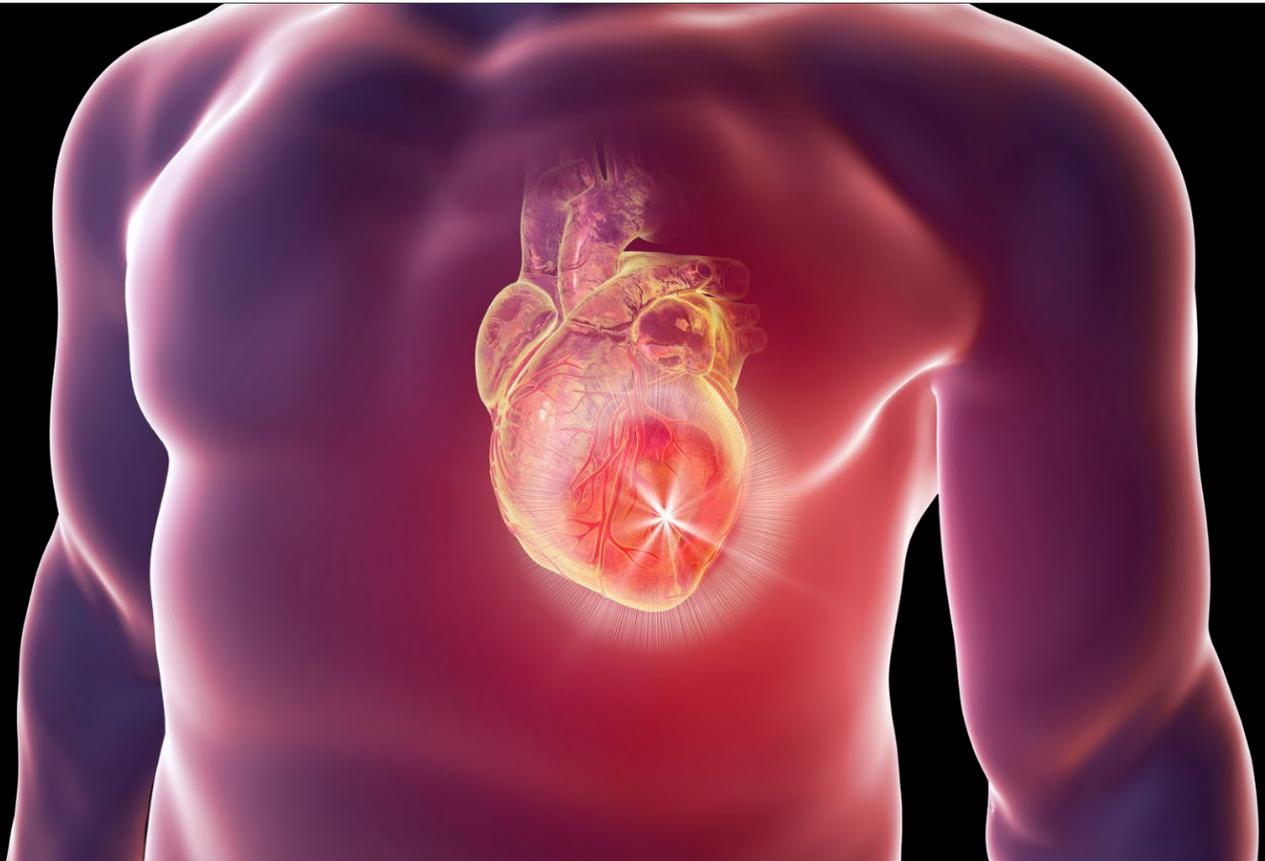




VIRGINIA CARDIAC SERVICES QUALITY INITIATIVE



2020-21

ANNUAL REPORT

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The Virginia Cardiac Services Quality Initiative (VCSQI) Annual Report is a confidential professional peer review and quality assurance document of VCSQI and is intended for use by physicians, data managers, administrators, quality staff, and the cardiac services community for development and evaluation of quality improvement plans.

The source of statewide outcome metrics and calculations are from the VCSQI data warehouse. VCSQI member hospitals submit Society of Thoracic Surgeons (STS) Adult Cardiac Surgery data and American College of Cardiology (ACC) CathPCI data on a quarterly basis. Exclusion criteria and Observed-to-Expected recalibration coefficients are applied as specified.

All data in this report is protected from disclosure pursuant to the provisions of Virginia statutes as may be applicable.

Unauthorized disclosure or duplication is absolutely prohibited.

Comments and questions may be directed to:

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LETTER FROM THE CHAIRMAN



Robert A. Shor, MD
Virginia Heart

2020 was coined as the year of opportunity for VCSQI. While facing a pandemic that changed the way we interact as a nation, VCSQI and member organizations utilized technology to enhance our mission to rise against the tide. We surveyed our members to develop informative and interactive meetings focusing on relevant material that impacts our patients which helped to develop the following priorities for the year:

1. Integrating the VHAC Network and Database into VCSQI
2. Relaunch and Enhance Cath Film Reviews
3. Development of additional workgroups such as Shock and AKI

We continue to move the needle in developing content and enhancing our database to include data such as TVT and cost/financial data. Our partners, ARMUS, are developing new dashboards to help to construct the impact of cost relative to care. This is a stepping-stone of more opportunities yet to come. In addition, we have cultivated a partnership with the Virginia Heart Attack Coalition (VHAC) efforts to integrate STEMI data from ACC and AHA registries.

In collaboration with the Johns Hopkins University and the University of Maryland, the angiogram film review process has been redesigned utilizing the expertise of the Maryland Academic Consortium for Percutaneous Coronary Appropriateness and Quality (MACPAQ). Currently, we are trialing this enhanced program with 2 member organizations. Our goal is to present initial results and invite the remaining centers to participate in this initiative as a new method of ensuring appropriateness and transforming heart care.

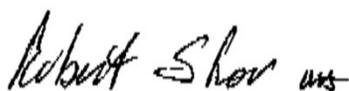
We have developed several working groups to improve the care we provide to our patients. These work groups are focused on AKI, Shock Management and Perfusion. We have partnered with organizations such as the Maryland Cardiac Surgery Quality Initiative (MCSQI) and the VHAC to deploy surveys across the state and better understand current practices relative to these initiatives.

VCSQI is committed to diversity, racial equality and reducing healthcare disparities. Our Healthcare Disparities Workgroup is in the early stages of development.

There is no better time to foster regional, interdisciplinary cooperation. A progressive agenda built on trusting relationships can drive change. A knowledge community can accelerate the adoption of life-saving best practices. The methods and dynamics underlying VCSQI can be generalized beyond our boundaries. My sincere wish is for our collaborative spirit to promote a unity of purpose that will create safer medical environments and enhance outcomes for our patients.

This Annual Report is intended to showcase the collaborative opportunities within VCSQI and to provide your institution insights by comparing your outcomes and process measures to state and national benchmarks. Your feedback and ideas are greatly appreciated. Thank you for your support and membership.

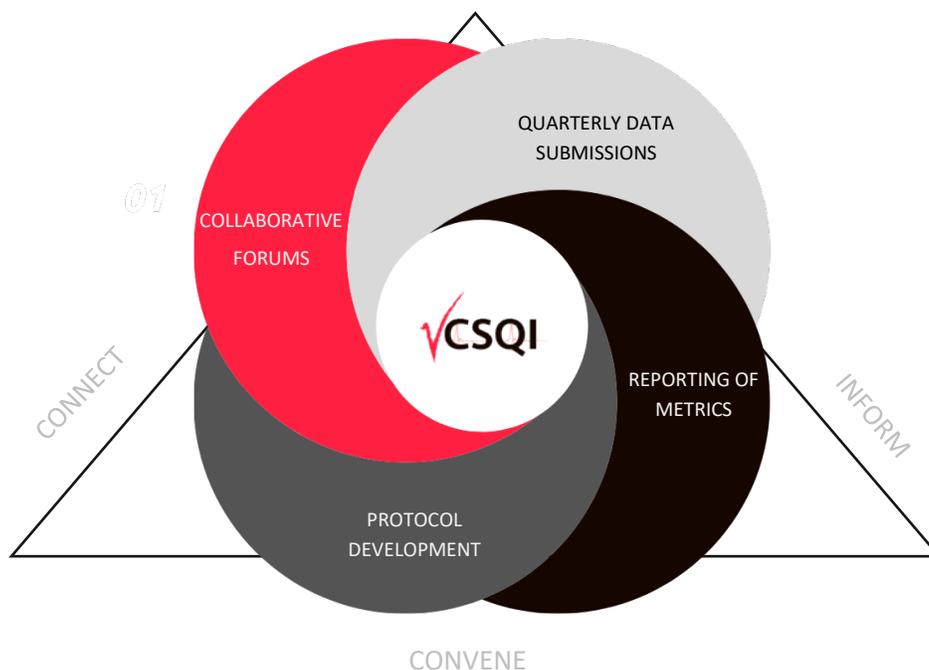
Sincerely,



Robert Shor, MD

THE VCSQI MODEL

Transforming Healthcare via Collaboration and Joint Accountability



The organization focuses on improving outcomes through process of care changes and replication of best practices. VCSQI serves as a peer-to-peer value exchange whose work:

- Promotes the adoption of evidence-based best practices.
- Ensures fair and accurate reporting.
- Operationalizes Appropriate Use Criteria (AUC) across a span of cardiology and cardiac surgery procedures.
- Monitors and improves clinical and financial outcomes.

VCSQI provides value to its stakeholders by combining effective communications with evidence-based practices. This model creates stronger alliances between heart team members, increased accountability, enhanced clinical effectiveness, reduced regional variations, lowered costs of care, and improved patient satisfaction.

VCSQI promotes a culture of continuous quality improvement for the entire cardiac services community. Participation is open, voluntary, and equitable.

CONNECT

OPERATIONAL HIGHLIGHTS

To maximize the effort of the collaborative, various multi-specialty workgroups and committees have been established. In addition, VCSQI continues to strengthen its partnership with members of the organization. Below are the 2020 highlights of these efforts.

MONTHLY CHECK-INS

Scheduled at convenient times to support the operational needs of our members, VCSQI Executive Director, Eddie Fonner and Sherri White, Quality Improvement Advisor meet with members of the collaborative on a one-on-one basis to discuss operational goals, best practices, and relevant data trends. During 2020, our administrative duo has been invited to present pertinent data to System Leadership, Quality Committees, and other executive forums. Our team prides itself as functioning as an extended member of our partner organizations.

WORK GROUPS & COMMITTEES

Shock Management Workgroup

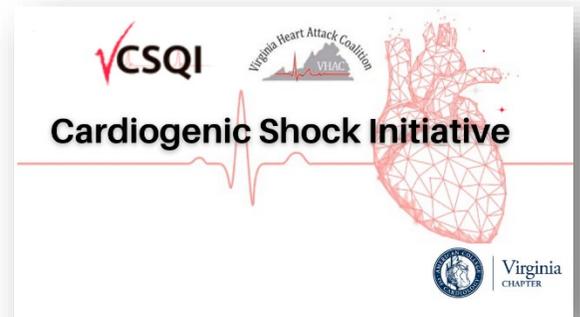
Champion: Behnam Tehrani, MD (Inova)

Regional Partners: Virginia Heart Attack Coalition (VHAC)

Established: Summer 2020

Cardiogenic shock is a multifactorial, hemodynamic syndrome associated with high mortality rates. Despite advances in reperfusion and mechanical circulatory support, managing shock remains highly variable with poor outcomes. The Shock Management Workgroup was established to develop a standard of care for shock patients across the state and bridge the gap toward better outcomes for this population of patients.

With the help of the Virginia Heart Attack Coalition, the group developed a 20-question assessment to better understand current shock management protocols. Invitations to participate in the survey were sent to over 38 PCI Centers across Virginia. The workgroup remains diligent in its efforts to obtain feedback from all PCI centers. Future steps in this effort includes working with the ACC to establish shock as a priority.



Goals:

- Develop standardized data collection tools.
- Collect data for a regional / statewide registry.
- Develop protocols & create standard metrics for identification and treatment of shock patients.

Milestones:

1. Collect and review survey data (use VHAC regions to gather more results).
2. Assemble our team by recruiting champions at interested centers.
3. Develop case report forms: basic demographics, hemodynamics, lactates, and the treatment that the patient received.
4. Cultivate best practices and develop protocols.

VCSQI Perfusion Group

Champion: Evelynn "Eve" Dallas, CCP (UVA)

Partners: Maryland Cardiac Surgery Quality Initiative (MCSQI) Perfusion Group

Established: Fall 2020

The delivery of quality and effective perfusion care has been studied extensively for decades. VCSQI has launched an initiative to promote consensus practice guidelines throughout the Commonwealth. Through the leadership of Eve Dallas, CCP (UVA) several efforts are now taking place in the world of perfusion.

Goal:

- To share strategies and experiences to garner best practices and create standards of care for perfusionists across Virginia.

Milestones:

- Obtain perfusion representation from each member organization.
- Development of the following subgroups:
 - AKI After Cardiac Surgery (in conjunction with the AKI Workgroup)
 - EMR Integration

Objectives:

- Specify a reporting structure to best capture perfusion metrics within the electronic medical record.
- Network with EPIC Informatics teams between hospitals to deploy report structure.
- Provide feedback to EPIC Informatics teams on use and growth of the tool.

- Goal-Directed Perfusion (GDP)

Objectives:

- Assess specific techniques for GDP.
- Discover institutions currently using GDP protocols.
- Evolve and study of GDP results.

Enhanced Recovery Taskforce

The Enhanced Recovery Taskforce has evolved into a mentorship/resource group. Dr. Kevin Lobdell (Atrium Health) serves as the Strategic Advisor for the group, and Bethany Sarosiek, RN (UVA) has shared resources and experiences from implementing an ERAS program in her institution.

Protocols, workflows, and other resources related to ERAS will be compiled on the VCSQI website in 2022. Additional opportunities in this area of interest will be made available through the Perfect Care Collaborative.

AKI Workgroup

Champions: Michael Brown, CCP (Mary Washington), Chris Sytsma, RN, MSN (Winchester),

Nick Teman, MD (UVA), and Kerry Prewitt, MD (Sentara)

Established: Winter 2020

Over the past two years, VCSQI has identified an increasing trend in acute kidney injury in both cardiac surgery and cardiology procedures. In recognition of this trend, VCSQI convened a new workgroup to improve kidney function in the cardiac population. Via data analysis, current literature review, and surveying members of the VCSQI community, the group has drafted a comprehensive set of recommendations for mitigating AKI.

The workgroup harnesses the perspective and experience of our heart experts to develop standardized approaches for combating AKI in all cardiac patients. This initiative presents a unique challenge and opportunity as one of the first collaborative efforts of VCSQI to improve outcomes across the continuum of care in cardiac services as a collective entity.

Goal:

- To develop best practices to prevent AKI.

Milestones:

- Establish a team to garner the full perspective of AKI prevention.
 - Recruit and obtain insight from a Nephrologist.
 - Recruit and obtain insight from an Anesthesiologist.
- Develop a renal protection protocol to be shared among the VCSQI community.
- Review and develop strategies in implementing STS AKI guidelines.

The Perfect Care Collaborative

Champion: Kevin Lobdell, MD, LTC, MC, USAR

Established: Winter 2020

With efforts to maximize opportunities in digital health, remote monitoring tools, and resources to improve care and minimize cost, VCSQI has partnered with Perfect Care. Institutions within North Carolina, including WakeMed and Atrium Health, have joined this expanded effort, with more partner organizations expected to join soon.

Goal:

- Facilitate sharing of quality data between networks to identify opportunities for improvement, drive implementation of best practices, and optimize patient care.

Milestones:

- Share summary-level STS quality data between collaboratives.
- Integrate cost data.
- Share summary-level analyses correlating outcomes against cost.
- Share patient-level data for combined quality/cost initiatives and research.
- Integration of biometric data.
- Integration of patient-reported outcomes.
- Share biometric data and patient-reported outcomes.

Data Review Committee

Champions: Eddie Fonner (VCSQI) and Gyula Sziraczky (ARMUS)

Established: Spring 2019

The VCSQI Data Review Committee aim to enhance our clinical-financial database and reporting metrics. Members utilize this forum to provide additional insights in the development of reporting elements and system enhancements to for our members to understand the performance of their heart programs.

The group continues to collaboratively refine reporting methodologies and develop additional metrics for data sharing and discussion. This effort has led to the creation of new reports including the Cost Data Dashboard that was released in Spring 2021.

Goals:

- To refine reports and data tools to enhance reporting functionality and identify performance trends.
- To demonstrate the feasibility of a machine learning approach to enhance prediction for morbidity, mortality, and cost. These models focus on preoperative and immediate postoperative variables.

Milestones:

- Implement and refine machine learning algorithms.
- Calculate cost data for inpatient cardiac surgery and cardiology procedures.
- Develop summary-level reporting reports for the Perfect Care Collaborative Project.

Research and Writing Committee

Champion: Mohammed Quader, MD (VCU)

Established: 2004

After transferring to the University of Michigan, Dr. Gorav Ailawadi was recognized and thanked for his tenure as Research and Writing Chair for nearly a decade. Dr. Mohammed Quader graciously accepted the Chairman's role, and a plethora of new and exciting research projects are currently underway.

Goal: To utilize VCSQI data to spark innovation, improve quality, and transform cardiovascular care.

CathPCI Data Managers Workgroup

Champion: TBD

Established: 2017

The group continues to meet monthly to work through case scenarios, engage in open FAQ discussions, and discuss best practices in terms of operations and data abstraction.

The team is in search of a Champion to guide the VCSQI Administrative team in developing tools and resources to help in data management practices.

Quality Committee

Champion: Tracey Sheehan, RN, BSN (Bon Secours)

Established: 2003

During the COVID era, the Committee engaged in a joint learning venture with the Maryland Cardiac Surgery Quality Initiative (MCSQI). A collaborative virtual data managers workshop was hosted on November 5, 2020. Data managers united to review new changes in STS version 4.20.2, including case studies and an expert speaker to review the Aortic Section. In addition, Sheila Fairless, RN (ARMUS) provided training tips and tricks for the new Hybrid Analytics reporting software. This effort led to monthly meetings to discuss changes within the ARMUS platform as well as hosting workgroups in partnership with MCSQI.

In addition, Jennifer L. Kirby, MD, PhD, Division of Endocrinology & Metabolism at University of Virginia Health System, met with the group to share her experience and insights on treatments for diabetic patients and ERAS protocols.

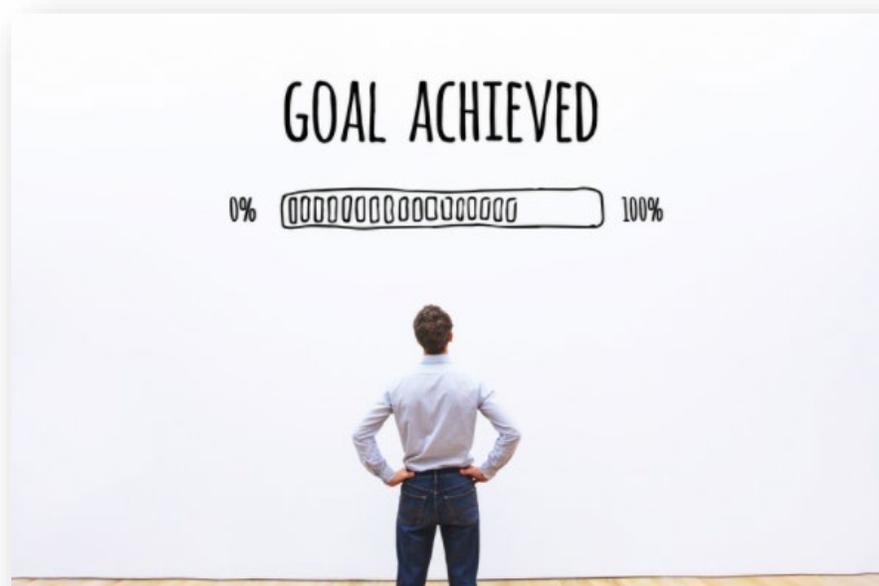


ORGANIZATIONAL STRATEGY AND GOALS

Throughout 2020, the VCSQI Leadership, Administrative Team, and membership continue to make progress on the established goals of the organization. Below is an update of the progress we have made as a collective to further transform heart health.

Goal	Objective	Milestones
Enhance Membership	Develop strategies/resources that allow dormant members to emerge while increasing the value of VCSQI.	<p>Database Expansion: We continue to add data sources to our database. Catheter-based procedures are often considered as outpatient services, and this has created challenges in acquiring the cost data. Thus, including ambulatory and outpatient financial data obtained from Virginia Health Information (VHI) has been very important and we look forward to our ongoing analysis. We continue to strengthen our partnered with Virginia Heart Attack Coalition (VHAC), ARMUS, and Perfect Care to identify ways to further improve the heart health of our patients.</p> <p>Analytical Insights: ARMUS continues to refine the build of predictive machine learning models. In conjunction with linked clinical-financial information, quality improvement teams will have the ability track patients longitudinally and better understand the long-term impacts of cardiac surgery and cardiology procedures.</p> <ul style="list-style-type: none"> • Develop multidisciplinary workgroups to draw on the expertise and strength of the collaborative.
Grow Membership	Increase collaboration with administrators and all heart team providers at current member facilities.	<p>Diversifying Membership: To further expand our collaborated efforts, we have developed workgroups to focus on efforts such as Shock Management and AKI. Through these initiatives, we have broadened our reach by collaborating with organizations such as Virginia Heart Attach Coalition (VHAC) and Maryland Cardiac Surgery Quality Initiative (MCSQI). Furthermore, we are exploring best practices outside of our immediate network and developing solid relationship with external entities across the globe.</p>
Engage Membership	Identify opportunities for collaboration.	<ul style="list-style-type: none"> • Created special interest working groups such as AKI, Perfusion, Shock, etc. • Host Monthly Check-ins with member programs to review metrics, best practices, and custom reporting. • Provide custom reports and highlight quality initiatives at members' system meetings and leadership forums. • Host quarterly meetings focused on topics relevant to both cardiology and surgical specialties.
Enhance Communication	Enhance use of technology and social media.	<ul style="list-style-type: none"> • Monthly newsletter and email blasts containing key information sent to over 350 subscribers to our mailing list.

Goal	Objective	Milestones
		<ul style="list-style-type: none"> • Development of social media platforms such as LinkedIn and Facebook. • Host Monthly Check-ins with member programs to review metrics and best practices. • Host virtual quarterly meetings and workgroups.
Share Best Practices	Develop resources to obtain, measure, and identify standardize protocols	<ul style="list-style-type: none"> • Recognize member organizations to capture best practice standards to share with the VCSQI members. • Highlight best practices at quarterly meetings and in newsletters.
Member Education	Provide a forum to enhance and further develop knowledge	<ul style="list-style-type: none"> • Host collaborative forums for data managers that focus on data abstraction, coding techniques, etc. • Host monthly meetings for data managers to meet with key resources from organizations such as ACC< STS, and ARMUS.



CONVENE

VCSQI QUARTERLY MEETINGS

VCSQI members meet quarterly to review clinical measures, share experiences and insights, while developing best practices to improve the quality of cardiac care for their patients.

Recent meetings featured compelling presentations that highlighted the amazing work of our member programs, as well as the extraordinary leaders who helped pave the ways of transforming heart care for the patients we serve.



VCSQI continues to host quarterly meetings virtually with the hope to resume our in-person meeting in 2022. We are honored to showcase our guest speakers and key partners who have helped to deliver quality information to our members.

Guest speakers and highlights of these meetings are as follows:

2020

Spring

Susan Warriner, MSN, APRN, NP-C of Winchester Medical Center gave an overview of her recent research using mobile patient education technology.

Rawn Salenger, MD of University of Maryland St. Joseph Medical Center provided an extensive overview of Enhanced Recovery After Surgery (ERAS).

Gyula Sziraczky, President of ARMUS Corporation, reviewed preliminary data from matching financial records with patients from the CathPCI database.

Summer

Daniel Carey, MD, FACC, MHCM, the Secretary of Health and Human Resources for the Commonwealth of Virginia, provided an overview of the state's response to COVID-19 and fielded questions from the audience about the ongoing pandemic.

Hunter Mehaffey, MD, MSc of University of Virginia announced the recent collaboration between VCSQI and Cardiothoracic Surgical Trials Network (CTSN) on a study to better understand the barriers to implementation of concomitant ablation during mitral valve surgery.

Behnam Tehrani, MD, FSCAI of INOVA Heart and Vascular Institute provided an overview of the resources, tools, and mindset needed to implement a successful cardiogenic shock heart team.

Jennifer L. Kirby, MD-PhD of University of Virginia shared her experience and insights on treatment of diabetic patients and ERAS protocols.

Fall

Erik Osborn, MD of INOVA Heart and Vascular Institute gave a compelling narrative of the ongoing pandemic and ECMO support of COVID-19 patients.

Behnam Tehrani, MD, FSCAI of INOVA Heart and Vascular Institute shared an update from the Shock Workgroup about current efforts to survey shock team practices across Virginia.

Chris Sytsma, RN, MSN of Winchester Medical Center detailed how data from VCSQI drives quality improvement at her institution.

Winter

Wayne Batchelor, MD, MHS, FACC, FSCAI of INOVA Heart and Vascular Institute led a comprehensive analysis of healthcare disparities and building equitable healthcare practices.

Hunter Mehaffey, MD, MSc of University of Virginia updated the VCSQI audience about the ongoing study of barriers to implementation of concomitant atrial fibrillation ablation and mitral surgery.



2021

Spring

Gyula Sziraczky, President of ARMUS Corporation, updated the group on machine learning algorithms to predict performance and enhance quality improvement methodologies.

Chris Sytsma, RN, MSN of Winchester Medical Center shared results from VCSQI research on obesity as a pharmacokinetic factor in response to amiodarone.

Summer

Brett Atwater, MD and Eric Sarin, MD of Inova Heart and Vascular Institute provided an overview of atrial fibrillation, including current therapies, catheter ablation, and surgical techniques.

Fall

Behnam Tehrani, MD, FSCAI, INOVA Heart and Vascular Institute and Peter O'Brien, MD, FACC; Centra Lynchburg and Founder of VHAC hosted the first collaborative quarterly meeting to focus on the Cardiogenic Shock Initiative. The panel of presenters included:

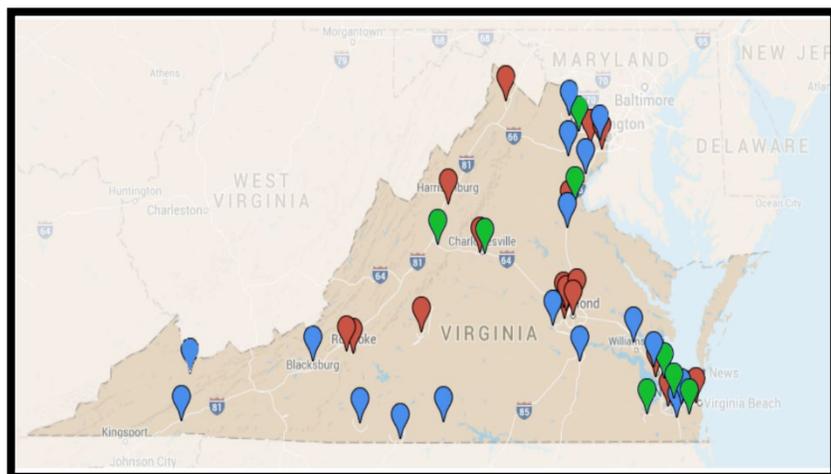
- *Sula Mazimba, MD, MPH, University of Virginia* – Clinical Case Presentation
- *Behnam Tehrani, MD, FSCAI, Inova* – Cardiogenic Shock: Current State of the Commonwealth
- *Dave Baran, MD, Sentara* – Not All Shock is the Same: Definitions and Nomenclature
- *Alex Truesdell, MD, FACC, FSCAI, FSVM, Inova* – Shock Teams, Shock Protocols and Shock Networks
- *Mike Kontos, MD, FACC, Virginia Commonwealth University* – Cardiogenic Shock Management in the Contemporary CICU
- *Ramesh Singh, MD, Inova* – Cardiogenic Shock: The Surgical Perspective
- *Carolyn Rosner, NP, Inova* – Building Your Team of Teams
- *Toral Patel, MD, MS, University of Virginia, and Kayla Roberts, RT(R)(CI), Winchester* – Panel Discussion and Next Steps

On behalf of VCSQI, Thank you to all of our presenters whose expertise continues to add value to the collaborative and helps to improve patient care across the Commonwealth.



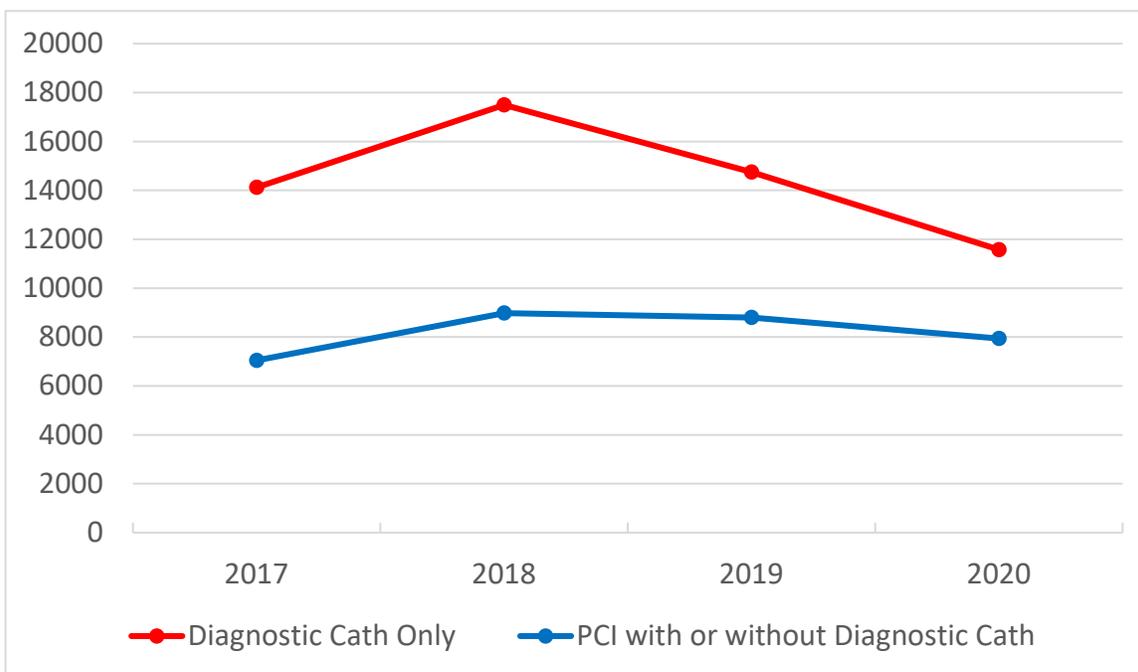
INFORM

EXPANSION TO INTERVENTIONAL CARDIOLOGY



VCSQI membership in has expanded from cardiac surgery centers (red) to include hospitals with stand-alone cardiology facilities (green). In 2020, VCSQI continued to recruit additional cardiology programs across the state (blue).

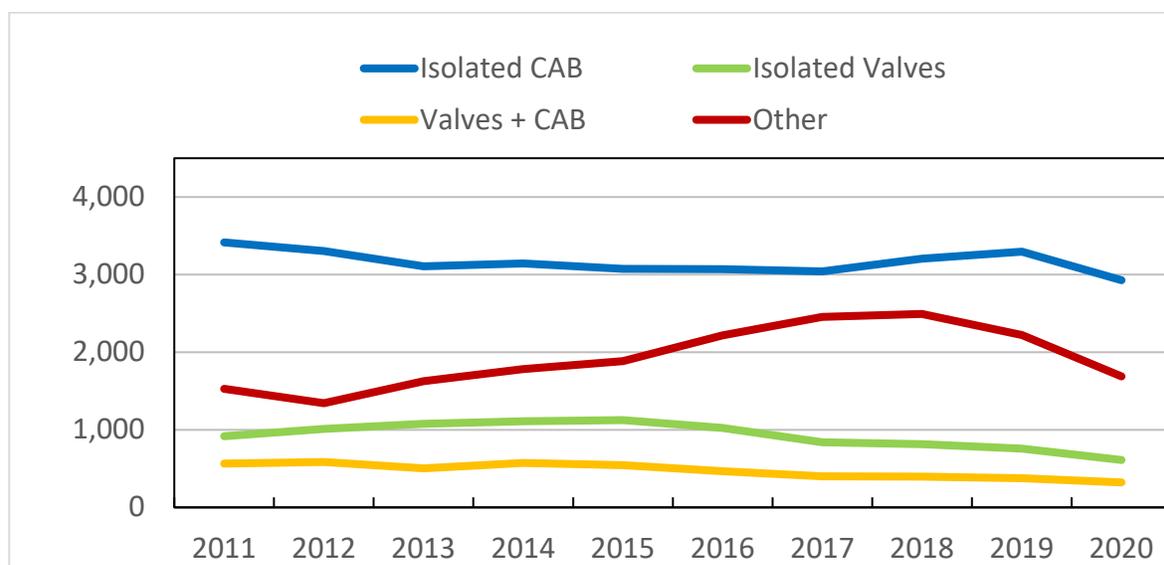
VCSQI CARDIOLOGY PROCEDURE VOLUME: CY 2017 – 2020



The VCSQI CathPCI registry includes 240,157 cardiology procedures: 156,149 diagnostic catheterizations and 84,008 PCI procedures.

ADULT CARDIAC SURGICAL VOLUMES

Volume by STS Procedure Type	2016	2017	2018	2019	2020
Isolated CABG	3,069 (45.3%)	3,040 (45.1%)	3,207 (46.4%)	3,296 (49.6%)	2,928 (52.8%)
Isolated AVR	552	414	381	311	245
AV Replacement + CABG	328	265	252	243	182
Isolated MVR	176	191	221	202	177
MV Replacement + CABG	64	49	56	57	54
Isolated MV Repair	296	236	214	246	189
MV Repair + CABG	74	87	88	75	86
Total: STS Major Procedures	4,559 (67.3%)	4,282 (63.6%)	4,419 (63.9%)	4,430 (66.6%)	3,861 (69.6%)
Other Procedures	2,219 (32.7%)	2,454 (36.4%)	2,493 (36.1%)	2,221 (33.4%)	1,688 (30.4%)
Total: All Procedures	6,778	6,736	6,912	6,651	5,549

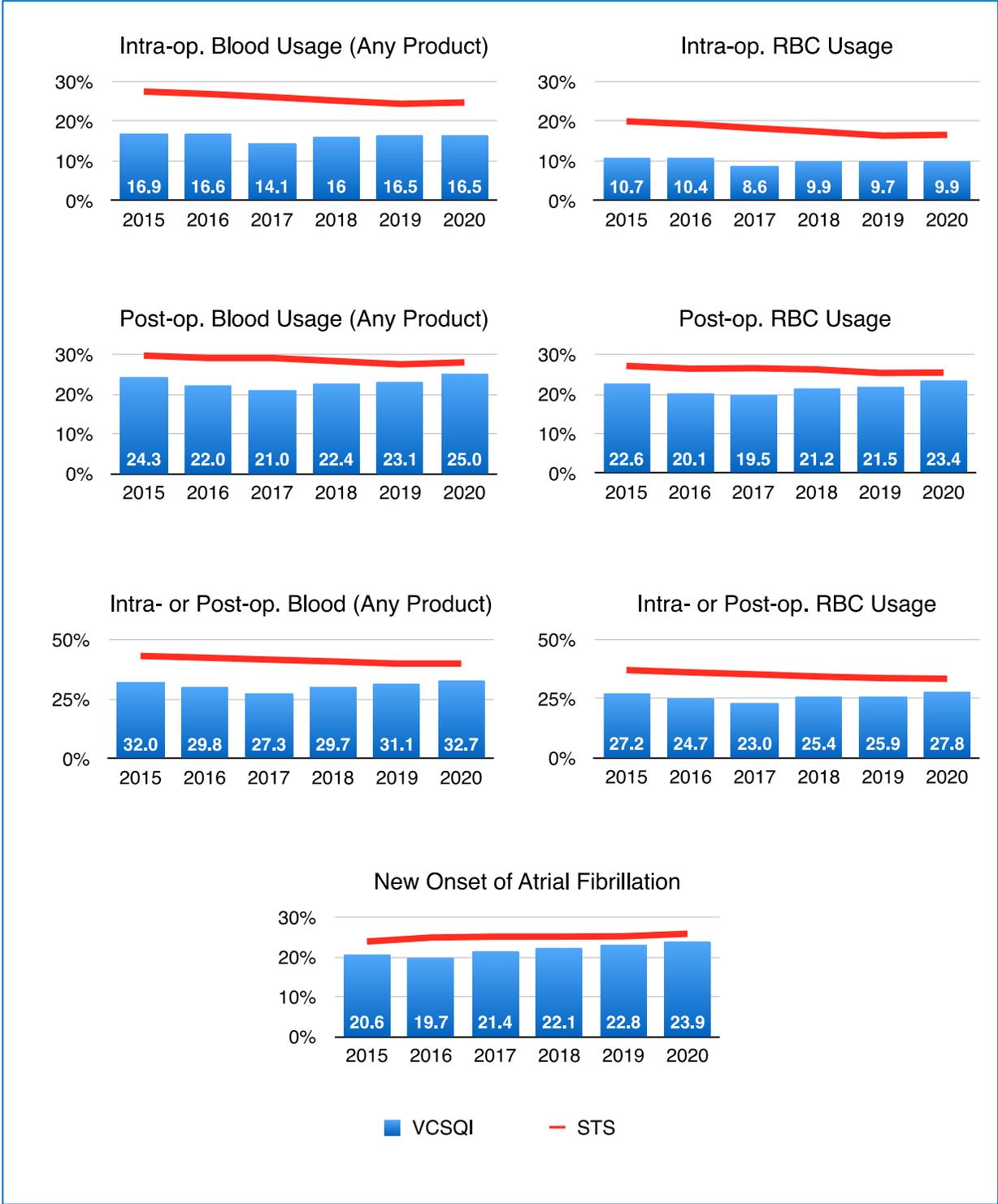


NQF EXECUTIVE SUMMARY: VCSQI AGGREGATE DATA

	VCSQI	2018	2019	2020	STS 2020
SURGICAL VOLUMES	All Cases	6,912	6,651	5,549	
	Isolated CABG	3,207	3,296	2,928	51.9%
	Isolated Valves	816	759	611	13.5%
	CABG + Valve Surgery	396	375	322	6.7%
	Other Procedures	2,493	2,221	1,688	27.9%
PRE-OPERATIVE	Timing of Antibiotic Administration	99.2%	99.4%	99.4%	98.0%
	Selection of Antibiotic Administration	99.9%	99.8%	99.9%	98.5%
	Duration of Prophylaxis	99.6%	99.7%	99.6%	98.9%
	Pre-operative Beta Blockers	98.4%	98.9%	97.2%	96.6%
OPERATIVE	Use of Internal Mammary Artery	99.5%	99.5%	99.5%	99.4%
COMPLICATIONS	Prolonged Ventilation O/E	0.88	0.94	1.08	1.00
	Deep Sternal Wound Infection O/E	1.38	1.49	1.27	1.00
	Stroke / Cerebrovascular Accident O/E	0.86	0.64	0.90	1.00
	Post-operative Renal Insufficiency O/E	1.14	1.14	1.21	1.00
	Surgical Re-exploration O/E	1.12	1.05	1.02	1.00
DISCHARGE	Anti-platelet Medication at Discharge	99.9%	99.9%	99.8%	98.2%
	Beta Blockers at Discharge	99.3%	99.4%	99.6%	98.8%
	Anti-lipids at Discharge	98.8%	99.3%	99.1%	98.4%
OPERATIVE MORTALITY	Inpatient Operative Mortality O/E for CABG	0.94	0.91	1.12	1.00
	Op. Mortality O/E for CABG	0.88	0.92	1.02	1.00
	Op. Mortality O/E for AV Replacement	0.76	0.67	1.04	1.00
	Op. Mortality O/E for AV Replacement + CABG	0.82	1.01	0.88	1.00
	Op. Mortality O/E for MV Replacement	1.46	0.91	1.26	1.00
	Op. Mortality O/E for MV Replacement + CABG	0.99	0.91	1.07	1.00
	Op. Mortality O/E for MV Repair	1.76	2.61	1.80	1.00
	Op. Mortality O/E for MV Repair + CABG	1.03	0.80	1.74	1.00
READMISSIONS	30-day Readmission Rate: CABG Only Patients	8.9%	8.9%	8.7%	9.1%

CARDIAC SURGERY CLINICAL QUALITY INDICATORS

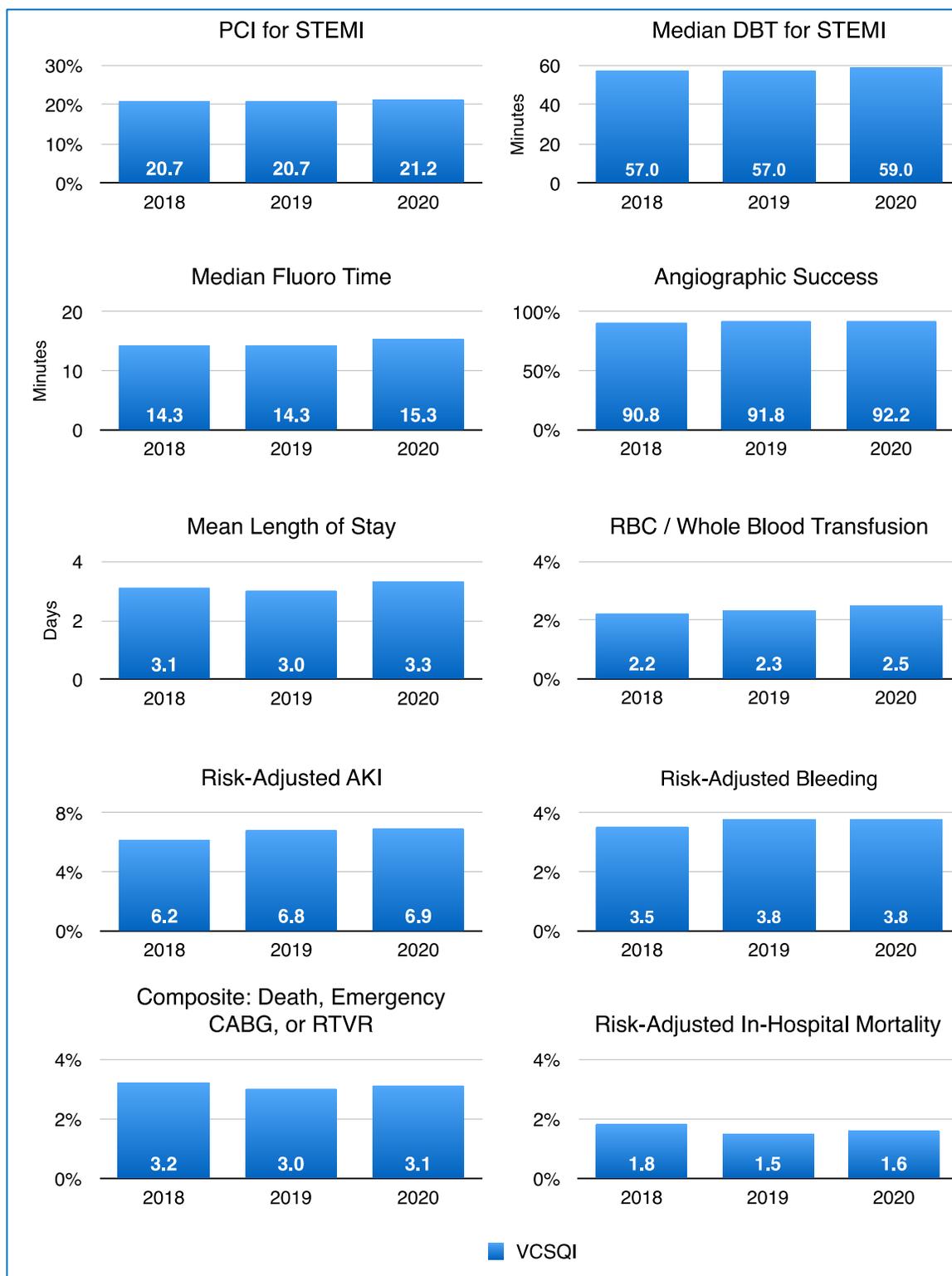




STS DATA SPECIFICATIONS

<p>Operative Mortality O/E*: Any death during patient hospitalization or within 30 days of surgery</p>	<p>Inpatient Mortality O/E*: Any death during patient hospitalization</p>
<p>Prolonged Ventilation O/E*: Post-operative pulmonary ventilation greater than 24 hours</p>	<p>Permanent Stroke O/E*: Post-operative stroke that did not resolve within 24 hours</p>
<p>Renal Failure O/E*: Increase in post-operative serum creatinine greater than 3 times baseline, serum creatinine greater or equal to 4 mg/dL, or new requirement for dialysis post-operatively</p>	<p>Mediastinitis O/E*: Any post-operative deep sternal wound infection or mediastinitis during patient hospitalization or within 30 days of surgery</p>
<p>Re-Operation O/E*: Return to the operating room for bleeding, valve dysfunction, graft occlusion, myocardial ischemia, aortic reintervention, or other cardiac reasons (the NQF definition does not include 'other non-cardiac reasons')</p>	<p>Morbidity/Mortality O/E*: Any patient incurring operative mortality or any of the five major STS morbidities</p>
<p>Readmissions within 30 Days: Any patient who was readmitted for inpatient stay at an acute care facility within 30 days of discharge</p>	<p>Re-Operation for Bleeding: Re-exploration for mediastinal bleeding either in the ICU or return to operating room</p>
<p>Length of Stay (LOS) Admit-Discharge: Total number of days from patient admission to discharge</p>	<p>Length of Stay (LOS) Surgery-Discharge: Total number of days from surgery to discharge</p>
<p>Post-Operative Ventilation Time: Total amount of time from operating room exit to initial extubation, plus any additional time spent on pulmonary ventilation</p>	<p>Early Extubation: Initial Ventilation Hours less than 6; includes patients who were extubated in the operating room</p>
<p>Intra-Operative Blood Products: Any patient who was transfused any time intra-operatively during the initial surgery.</p>	<p>Post-Operative Blood Products: Any patient who was transfused any time post-operatively</p>
<p>New Onset of Atrial Fibrillation: Any patient with post-operative Atrial Fibrillation; excludes patients with pre-operative history of atrial fibrillation.</p>	<p>*The Observed-to-Expected Ratio (O/E). These calculations divide the percentage of an observed morbidity by the rate predicted by the STS risk calculator. All O/E ratios apply STS Recalibration coefficients, which normalize the national benchmark value to exactly 1.0.</p>

INTERVENTIONAL CARDIOLOGY CLINICAL QUALITY INDICATORS



ACC DATA SPECIFICATIONS

<p>PCI for STEMI: The proportion of PCI procedures where STEMI or STEMI equivalent was noted on either the first ECG or a subsequent ECG and the PCI was performed emergently and without delay after diagnosis (<12 hours)</p>	<p>Median DBT for STEMI: Median Door to Balloon Time (DBT) in minutes (from Arrival Date/Time or STEMI noted on "Subsequent ECG date/time" to "First Device Activation date/time) where the patient's PCI Indication is Immediate PCI for STEMI, and the patient was not transferred for the PCI and were not excluded from the calculation due to Delay Reason or missing data</p>
<p>Median Fluoro Time: The median Fluoroscopy Time in minutes in PCI procedures of one vessel/lesion</p>	<p>Angiographic Success: The proportion PCI procedures with angiographic success (Lesions <=20%) for all Lesions</p>
<p>Mean Length of Stay: The mean length of stay in days from admission to discharge</p>	<p>RBC / Whole Blood Transfusion: The proportion of PCI procedures with post-procedure whole blood or packed red blood cell transfusion</p>
<p>Risk-Adjusted AKI*: Acute Kidney Injury is defined as Stage 1 or Greater (Stage 1 - creatinine increase >50%, an absolute increase of ≥ 0.3 mg/dL) or a new requirement for dialysis following PCI. Risk is based on: Age, Diabetes, Glomerular Filtration Rate, Heart Failure within 2 weeks, History of Anemia, History of CVD, History of HF, IABP in place at start of procedure, CAD Presentation, Prior Cardiac Arrest, Prior Cardiogenic Shock</p>	<p>Risk-Adjusted Bleeding*: Post-PCI bleed is defined in this metric as any one of the following: Bleeding event w/in 72 hours, Hemorrhagic stroke, Tamponade, Post-PCI transfusion for patients with a pre-procedure Hgb >8 g/dL, or absolute Hgb decrease from pre-PCI. Risk is based on: STEMI, Age, BMI, Prior PCI, Kidney Disease, Cardiogenic shock/ PCI status, Prior Cardiac Arrest, Gender, Hgb, PCI Status</p>
<p>Composite – Death, Emergency CABG, or RTVR: The proportion of PCI procedures with post-procedure emergency CABG, Repeat Target Vessel Revascularization (RTVR) or discharge status of deceased. RTVR is defined as a repeat PCI procedure on the same segment during the same Episode of Care</p>	<p>Risk-Adjusted In-Hospital Mortality*: Any death during patient hospitalization. Risk is based on: STEMI, Age, BMI, Prior CVD, Prior Chronic Lung Disease, Prior PAD, Diabetes and Control, EGFR, Pre-Procedure Creatinine, Pre-PCI LVEF, Cardiogenic Shock Status, PCI Status, Post Dialysis, Prior Heart Failure (w/in 2 weeks), Prior NYHA Class within 2 weeks, Prior Cardiac Arrest</p>
<p>*Risk-Adjusted Rates utilize standardized risk models developed by the American College of Cardiology and licensed by VCSQI's database vendor, ARMUS Corporation.</p>	

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	Cardiac Surgery	Cardiology
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Bon Secours Memorial Regional Medical Center	X	
Bon Secours St. Mary's Hospital	X	X
Carilion Roanoke Memorial Hospital	X	X
Centra Lynchburg General Hospital	X	X
HCA Levinson Heart Hospital at CJW Medical Center	X	
HCA Henrico Doctor's Hospital	X	
HCA Lewis-Gale Medical Center	X	
Inova Alexandria Hospital		X
Inova Fairfax Hospital	X	X
Inova Loudoun Hospital		X
Mary Washington Hospital	X	X
Riverside Regional Medical Center	X	
Sentara Careplex Hospital		X
Sentara Heart Hospital, Norfolk		X
Sentara Leigh Hospital		X
Sentara Martha Jefferson Hospital		X
Sentara Norfolk General Hospital	X	X
Sentara Northern Virginia Medical Center		X
Sentara Obici Hospital		X
Sentara Princess Anne Hospital		X
Sentara Rockingham Memorial Hospital	X	X
Sentara Virginia Beach General Hospital	X	X
Sentara Williamsburg Regional Medical Center		X
University of Virginia Health Sciences Center	X	X
Valley Health Winchester Medical Center	X	X
Virginia Commonwealth University Pauley Heart Center	X	

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TESTIMONIALS

“COVID definitely changed some things for VCSQI this past year, but it didn’t stop the group’s mission to improved quality and reduce costs for cardiac patients while improving the efficiency of healthcare systems. Though it was sad to not see people in person for our quarterly meetings, we still had great attendance and speakers at the virtual meetings. Several new groups formed this year. I am really excited for the AKI work group because it is such a complex problem. I am in awe of the perfusion group and have enjoyed listening to them talk and problem solve. The shock group also has amazing talent and commitment to best practices. What’s so exciting about these groups to me, is that they all are patient centered. As data abstractor clicking a lot of yeses and noes and drop-down menus and countless emails to Shelia at ARMUS, the heart of all we do is for our patients. They are entrusting their lives to us and trusting us to do the right thing for them. It is super exciting to me to see the VCSQI’s commitment to improving care and partnering with us to improve. I am thankful to be part of this group and for all my abstractor buddies who keep me on the right track. I look forward to continuing this journey which will be even more fun when we can actually see each other (maybe?) in the coming year.”

Judy Smith, RN (UVA Health)

“... Sheri and Eddie... thank you very much for sending over in very important data that I've asked for. I was away for a while, but I think this database has very valuable information that we can mine not only projects with leads to publications but also to understand the analysis of our care that we provide to these patients and areas that probably we can focus and improve.”

Chalak Berzingi, MD (Carilion)

“...I am so appreciative and admiring of the great work, quality work, and really trend setting work that this organization means in the Commonwealth first with cardiac surgery and more recently with additional aspects of cardiovascular care. You are really setting the standard for high quality care, appropriate care that reduce cost and increase quality, increase standardization, decrease inappropriate variations. You have really set the standard in Virginia. I am so proud to understand your work, to have participated in your work in the past and so glad that your work is as vibrant as ever and continuing to increase in its influence.”

Daniel Carey, MD (Secretary of Health and Human Resources – Virginia)

“I do want to take this opportunity to thank Sherri and Eddie for all they do. I think that sometimes we forget what is done behind the scenes and I know if I have a request the turnaround is usually less than 24hrs and this just blows my team out of the water.”

Chris Sytsma, RN, MSN (Winchester)
