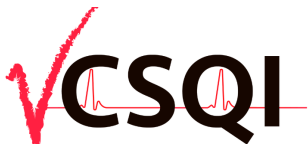


# Harnessing Actionable Data Transforms Cardiovascular Care Quality and Value



## RESULTS

- **\$49M+ in cost savings** over six years, the result of a **30 percent relative reduction** in red blood cell transfusions for patients undergoing cardiovascular surgery.

## PRODUCTS

- **ARMUS by Health Catalyst™ for Societies suite**
- **ARMUS by Health Catalyst™ HYBRID Analytics**

## EXECUTIVE SUMMARY

Cardiovascular disease (CVD) has significant health and cost implications. The Virginia Cardiac Services Quality Initiative (VCSQI), a non-profit consortium of cardiac surgical and interventional cardiology practices, is dedicated to improving cardiovascular care through process improvements and replication of best practices. Using the ARMUS by Health Catalyst™ for Societies suite has enabled VCSQI to turn participant data into a high-quality data asset to support improvement efforts. By leveraging data-driven insights, fostering research collaboration, and building strategic partnerships, VCSQI aims to continue leading the way in transforming cardiovascular care.

## CARDIOVASCULAR DISEASE: COSTLY AND DEADLY

In the U.S., CVD remains the leading cause of death, claiming more lives than all forms of cancer and accidental deaths.<sup>1</sup> The financial burden of CVD is substantial, with the U.S. spending more than \$100B on heart disease treatment.<sup>2</sup> Quality challenges including complications such as infections, stroke, prolonged ventilation, and unnecessary blood product transfusions can increase costs and negatively impact patients' quality of life. VCSQI is transforming cardiac care through collaboration, data-driven insights, and process improvements.

## THE NEED TO IMPROVE CARDIOVASCULAR CARE QUALITY

VCSQI recognized that to improve cardiovascular care quality, patient experience, and value, it needed timely access to actionable data and analytics. Without data and analytics, the organization would be unable to identify opportunities for improvement, compare participant performance to benchmarks and peers, or assess the impact of practice changes on patient outcomes. VCSQI

also needed a partner that could adapt to changing business needs over time.

## TRANSFORMING DATA INTO ACTIONABLE INSIGHTS

VCSQI selected the ARMUS by Health Catalyst™ for Societies suite, enabling it to turn participant data into a high-quality data asset to support improvement efforts. Initially implemented to support the cardiac surgery collaborative, VCSQI expanded over 20+ years, using ARMUS to integrate data from numerous national registries, including surgical, catheter, and valve registries.

Using ARMUS, VCSQI has a broad clinical data repository. The organization integrates governmental payer data into ARMUS and utilizes a validated algorithm to convert charges into estimated costs, thereby linking financial, claims, and clinical data to accurately estimate care costs.

VCSQI uses the ARMUS by Health Catalyst™ HYBRID Analytics application for real-time, self-service longitudinal reporting, generating insights that consortium participants use to drive clinical outcomes improvements. VCSQI can easily visualize high-profile society metrics, patient detail reports, benchmark reports, and side-by-side comparison reporting across participants for hundreds of standard measures. The organization can analyze its data to identify opportunities for clinical and cost improvement across a wide spectrum and evaluate the impact of these changes on patient outcomes and financial performance.

In addition to on-demand reports, VCSQI distributes quarterly performance reports and engages participants to prioritize improvement efforts and implement evidence-based practice changes. For example, program participants prioritized implementing restrictive blood transfusion processes, proactive identification and remediation of risks for complications, processes to prevent surgical site infections and to optimize early recovery after surgery, strategies to reduce nephrotoxic medication use and improve kidney function, and activities to improve atrial fibrillation management.



### ABOUT THE VIRGINIA CARDIAC SERVICES QUALITY INITIATIVE

The Virginia Cardiac Services Quality Initiative (VCSQI) is a non-profit focused on improving cardiovascular care outcomes through changes in care processes and replication of best practices for the entire cardiac services community. Participation in the consortium is open, voluntary, and equitable. The organization is a consortium of 16 cardiac surgery hospitals and 28 cardiology practices. VCSQI is committed to driving groundbreaking improvements in patient outcomes, redefining quality standards, and building a future where every patient receives the highest level of care—efficiently, equitably, and sustainably.



***ARMUS allows us to show what's possible when you combine clinical expertise with robust data analytics. We're not just improving outcomes in Virginia—we're setting a model for cardiovascular care nationwide.***

Eddie Fonner, BA, Executive Director, Chief of Data Science, Virginia Cardiac Services Quality Initiative

## RESULTS

VCSQI's data-driven insights and improvement efforts are transforming cardiovascular care. Results include:

- **\$49+ million in cost savings over six years, the result of a 30 percent relative reduction in red blood cell transfusions for patients undergoing CV surgery over six years.**
- **Numerous cardiac surgery indicators surpass STS risk-adjusted rates, including:**
  - **0.68 deep sternal infection observed to expected (O:E) ratio.**
  - **0.71 permanent stroke O:E.**
  - **0.73 prolonged ventilation O:E.**
  - **0.76 major morbidity or mortality O:E.**
  - **0.8 operative mortality O:E.**
- **Numerous percutaneous coronary intervention clinical indicators demonstrate excellent performance across participants, including:**
  - **58-minute median door-to-balloon time.**
  - **3.3 percent risk-adjusted bleeding rate.**
  - **2.4 percent mortality rate after emergency coronary artery bypass graft, repeat vessel revascularization.**
  - **1.8 percent in-hospital mortality rate.**



*With ARMUS, our hospitals and practices don't work in silos. We're examining the same data, engaging in the same conversations, and developing best practices together. That shared understanding drives real, sustainable improvements in cardiovascular care.*

Sherri White, MSc, SSGBC, Chief of Quality and Operations, Virginia Cardiac Services Quality Initiative

## WHAT'S NEXT

Through data-driven insights, research collaboration, and strategic partnerships, VCSQI will continue to lead in cardiovascular care transformation, enhancing data utilization for better decision-making, ensuring improved patient outcomes, optimized healthcare delivery, and long-term sustainability in the field of cardiac medicine.

## REFERENCES

1. American Heart Association. (2025). *Heart disease remains leading cause of death as key health risk factors continue to rise*. American Heart Association. Retrieved from <https://newsroom.heart.org/news/heart-disease-remains-leading-cause-of-death-as-key-health-risk-factors-continue-to-rise>
2. Moriya, A. S., & Berdahl, T. (2025). *Healthcare expenditures for heart disease among adults aged 18 and older in the U.S. civilian noninstitutionalized population, 2022 (Statistical Brief #562)*. Agency for Healthcare Research and Quality. Retrieved from [https://meps.ahrq.gov/data\\_files/publications/st562/stat562.shtml](https://meps.ahrq.gov/data_files/publications/st562/stat562.shtml)

## ABOUT HEALTH CATALYST

Health Catalyst is a leading provider of data and analytics technology and services that ignite smarter healthcare, lighting the path to measurable clinical, financial, and operational improvement. More than 1,000 organizations worldwide rely on Health Catalyst's offerings, including our cloud-based technology ecosystem Health Catalyst Ignite™, AI-enabled data and analytics solutions, and expert services to drive meaningful outcomes across hundreds of millions of patient records. Powered by high-value data, standardized measures and registries, and deep healthcare domain expertise, Ignite helps organizations transform complex information into actionable insights. Backed by a multi-decade mission and a proven track record of delivering billions of dollars in measurable results, Health Catalyst continues to serve as the catalyst for massive, measurable, data-informed healthcare improvement and innovation.

Learn more at [www.healthcatalyst.com](http://www.healthcatalyst.com), and follow us on X, LinkedIn, and Facebook.