



MEDAXIOM
AN ACC COMPANY

INTEGRATED SOLUTIONS, UNIFIED TEAMS

ENABLING COLLABORATION ACROSS
THE CONTINUUM OF CARE

MARCH 2026



CV BUSINESS WHITE PAPER

With Support From:

PHILIPS



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EXECUTIVE SUMMARY

Structural heart disease (SHD) has emerged as one of the fastest-growing subspecialties of cardiovascular care. Driven by expanding patient indications, new device innovations, and a steady shift toward less invasive treatment options, structural heart (SH) programs are becoming a cornerstone of modern cardiovascular care. Since the Centers for Medicare & Medicaid Services (CMS) approved TAVR for low-risk patients in 2019, the eligible population has more than doubled, and similar expansions are underway in mitral and tricuspid interventions.

MedAxiom, with support from Philips, gathered real-world insights from leading academic SH programs to understand this transformation. Through analysis of key insights from virtual interviews, the MedAxiom team has identified critical lessons and forward-thinking strategies to help organizations proactively evolve their structural heart programs for future growth. These insights are particularly useful as programs look to expand into the ambulatory surgery center (ASC) space to keep pace with evolving CMS changes.

This transformation has not only redefined cardiac services but also fostered unprecedented collaboration across clinical and administrative disciplines, cultivating a deeper appreciation and understanding of teamwork. For health systems and physician groups, this represents both a growth engine and a strategic inflection point: demand for SHD therapies will surge, but only organizations that align clinical integration with outpatient-ready infrastructure will be poised to capture this growth. The next five years will determine which programs lead in SH care and which are left behind.



CASE SNAPSHOT

A Glimpse Into Evolution: One Center's Journey

Launching in 2015 and led by advanced practice providers (APPs), the Heart and Vascular Center at UCHealth University of Colorado Hospital exemplifies the evolution of SH programs. By creating a single shared valve clinic calendar, investing in advanced imaging, and implementing pre-planned discharge protocols, the program developed a national reputation. Today, the center, with expert faculty members from the University of Colorado School of Medicine, serves patients across a six-state area with a multidisciplinary team – including heart failure (HF), electrophysiology (EP), imaging and surgery – that jointly rounds and shares follow-up. Their biggest catalyst for success?

The heart valve clinic coordinator. It was a game changer.



THE TAVR CATALYST: BREAKING DOWN SILOS

The initial success of the TAVR program was largely due to their ability to bridge traditional clinical divides. TAVR mandated close teamwork between cardiologists and cardiac surgeons, a level of collaboration rarely seen before its advent. This collaborative spirit extended to administrators, service-line leaders and physicians, requiring alignment and compromise on critical operational details such as valve costs, billing practices, staffing models and space allocation. This integration created a new paradigm for clinical care, moving beyond isolated specialties to a more unified approach.

One academic center noted that while the clinical need was clear, the operational design was improvised. “We didn’t align the incentives from the beginning: clinic scheduling, imaging access and physician roles were all misaligned,” one leader shared. Still, a shared valve clinic calendar and cultural buy-in from surgeons catalyzed early teamwork. This intentional collaboration laid the groundwork for multidisciplinary success.

FROM ORGANIZED CHAOS TO COMPREHENSIVE CARE

The early days of TAVR were often a study in “organized chaos.” Infrastructure was built by reallocating existing resources, with shuffled staff and equipment manually moved between rooms. These fledgling programs faced significant hurdles. Inconsistent access to computed tomography (CT) imaging led to inefficient pre-procedural planning. A lack of shared clinic days between surgical and interventional teams hindered the collaborative care approach and often blurred ownership of the patient. Consequently, unclear ownership over patient tracking and post-discharge monitoring meant delayed follow-up with patients.

Over the last fifteen years, overcoming traditional barriers has transformed cardiac catheterization labs into comprehensive SH programs. This maturation was driven by a fundamental centralization of care, which included the following infrastructure changes:

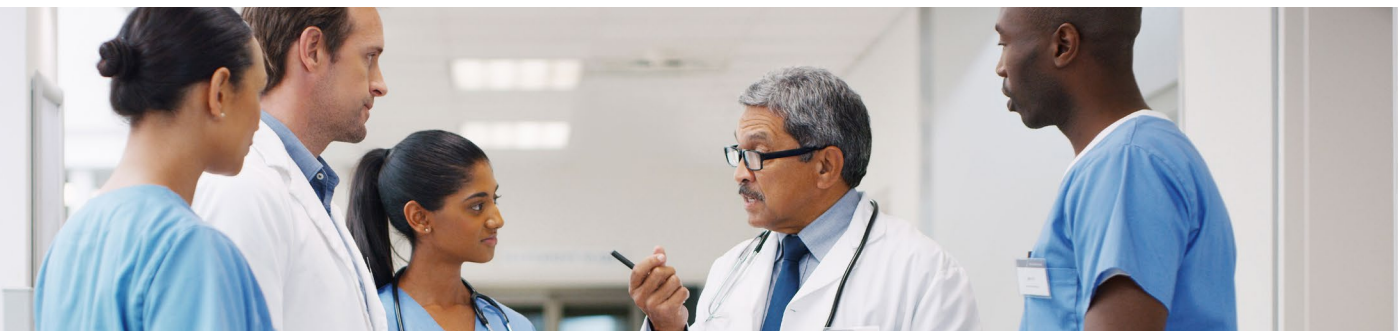
- Implementing a unified clinic schedule for cardiologists and surgeons.
- Reserving CT slots that aligned with clinic days.
- Utilizing a registered nurse (RN) or APP clinic coordinator to manage patient flow from initial triage to follow-up.

This shift, along with the adoption of standardized protocols for imaging and post-procedure care, has created a more cohesive and efficient care delivery model.

Today, these programs encompass a wide array of procedures beyond TAVR, including:

- Transcatheter mitral valve repair.
- Transcatheter tricuspid valve repair (TTVR).
- Left atrial appendage closure/occlusion (LAAC/LAAO).
- Atrial septal defect (ASD) ablations.
- Patent foramen ovale (PFO) closure.
- Percutaneous balloon valvuloplasty.

This expansion necessitates the involvement of a symphony of specialists all working in concert.



THE MODERN SH TEAM: A MODEL OF COLLABORATION

Historically, cardiology subspecialties possessed deep expertise and often operated independently, relying heavily on electronic medical records for communication. Today, successful SH programs function as interdisciplinary teams, with fully integrated specialists from imaging, HF, EP and anesthesia. The development of SH programs requires intentionally breaking down silos. Care is coordinated not only during procedures but also in pre-evaluation and post-discharge monitoring.

This multidisciplinary care unit is characterized by:

- **Regular Meetings:** Facilitating real-time discussion, collaboration and feedback.
- **Standardized Protocols:** Implementing uniform cardiovascular imaging protocols and reporting templates is crucial for consistent decision-making.
- **Clear Care Pathways:** Defining streamlined patient journeys.
- **Patient Tracking Mechanisms:** Enabling comprehensive monitoring of patient progress.
- **Multidisciplinary Clinic Schedules:** Boost patient, physician and staff time use.
- **Governance Models:** Empowering coordinators and APPs to manage workflow.
- **Shared Culture:** Promoting appropriateness over volume, triaging patients who may not need a procedure.

This integrated approach has improved patient outcomes, reduced length of stay, and enhanced resource utilization through cross-disciplinary expertise.



MULTIDISCIPLINARY CARE ISN'T JUST A BUZZWORD –
it's our operating system. EP, HF, imaging, we all round together."

John Messenger, MD

Professor of medicine at the University of Colorado School of Medicine and clinical director of the UCHHealth Health and Vascular Center.

LESSONS LEARNED FROM HIGH-VOLUME INSTITUTIONS

SH programs have become standard in large hospitals, and TAVR is now expanding into community hospitals. Learning from the experiences of high-volume institutions is vital, especially for smaller, resource-constrained hospitals developing new programs.

Key takeaways from leading centers include:

- ✓ **Multidisciplinary collaboration is the non-negotiable foundation.**
- ✓ **Imaging expertise is crucial for effective and efficient care.**
- ✓ **Dedicated coordinators are the glue. Successful SH programs have a strong clinic coordinator who manages referrals, triage and follow-up.**
- ✓ **Standardized scheduling protocols combined with integrated care teams improve both outcomes and operational efficiency.**
- ✓ **Advanced imaging technologies are critical throughout planning interventions to follow up.**
- ✓ **Modern, up-to-date equipment is indispensable.**
- ✓ **Loop imaging in from the beginning. Programs frequently overlooked the need to involve echo, CT and vascular imaging teams in the early phases of planning, leading to subsequent staffing stress and workflow breakdowns.**

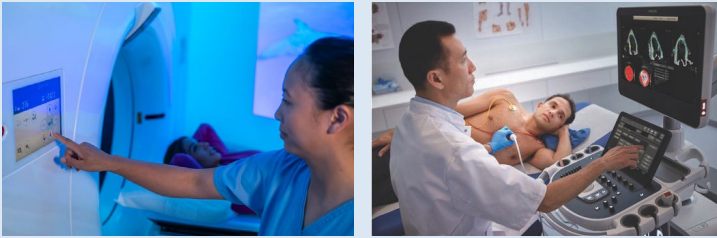


PHILIPS CARDIOVASCULAR CARE PATHWAY

Integrated Cardiology Solutions for Cross-Disciplinary Collaboration

DIAGNOSIS

Smart CT Solutions
with AI-enabled tools
and intelligent automation



AI-Enabled
Echocardiography

TREATMENT

Integrated
Interventional Ecosystem



3D Intracardiac
Echocardiography

Fusion
Imaging

Cardiology Informatics

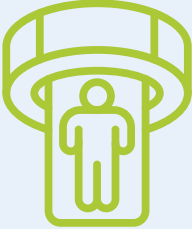


All cardiovascular information in one intuitive
workspace for informed clinical decisions and
streamlined workflow

The Philips Cardiovascular Care Pathway (above) illustrates how integrated, AI-enabled technologies connect every phase of cardiovascular care, from diagnosis and image acquisition to treatment, creating a unified ecosystem that supports clinical precision and operational efficiency.

PHILIPS SOLUTIONS FOR HIGH-VOLUME INSTITUTIONS

Philips offers a comprehensive, integrated approach to cardiovascular care that goes beyond superior imaging.



DIAGNOSIS

For diagnosis, newer technologies are AI-enabled to make scans more efficient and reproducible, increasing departmental efficiency and reducing operator-dependent variability. For example, Philips CT 5300 drives new level of confidence with a CT system designed to help see beyond current imaging challenges. CT Smart Workflow, a comprehensive suite of AI-enabled capabilities, delivers precision in dose, speed and image quality. Philips EPIQ CVx ultrasound system features a growing suite of AI enabled clinical applications, such as: Auto Measure provides fully automated 2D Doppler and length measurements; 3D Auto TV helps confirm/re-evaluate device size/selection with accurate and peri-procedure TV annulus measurements (initial sizing and plan with CT).



TREATMENT

During treatment, the Azurion with FlexArm provides imaging flexibility for diverse procedures and positioning freedom for medical teams. Azurion integrates with the EPIQ CVxi to bring TEE and 3D ICE imaging to the SH lab, and EchoNavigator automatically fuses live 3D TEE and live X-ray in real time.

Sharing information and collaborating across your cardiovascular service line ensures smooth operations for high-functioning SH programs. Independent of location, Philips Cardiovascular Workspace allows users to combine deep clinical expertise with technological innovation to securely connect patients, care teams and data across the entire cardiovascular care continuum.

These solutions support care at every phase, from diagnosis through treatment.

BRIDGING THE GAP: CLINICAL ADVANCES VS. OPERATIONAL CHALLENGES

While clinical advances have propelled SH programs forward, progress in hospital operations has lagged. Building high-performing, collaborative clinical teams must be paralleled by efforts to improve administrative functions.

“We’re still tracking patients in Excel,” one site admitted, highlighting the need for more seamless EHR integration.

Ongoing challenges include:

- **Compensation Misalignment:** Current physician relative value unit (RVU) compensation models often disincentivize collaboration. According to Dr. Quaife, director of advanced cardiac imaging at UHealth Heart & Vascular Center, forward-looking financial models should prioritize patient-centric care over strict RVU productivity or cost center allocation, focusing on “disease-based rather than equipment-based approaches.”
- **Cost Center Allocation:** This continues to foster an environment of operating room space or cath lab space vs. “home space,” hindering true integration.
- **Patient Tracking Tools:** Documentation and tracking tools still require refinement. Relying on archaic methods like Excel spreadsheets for monitoring patient progress is inefficient. Investing in robust electronic health record (EHR) capabilities is essential for modern patient care.

Addressing these administrative hurdles is crucial for sustaining growth and fostering patient-centric innovation as SH programs continue to expand in size to meet the rising demand from an aging population seeking minimally invasive therapies and in complexity due to evolving technology.

DEFINING THE NEXT-GENERATION SH PROGRAM

Based on insights from the field, here are five features of high-functioning, future-ready SH programs:

1. Outpatient-First Strategy

- Leverages hybrid operating room/catheterization spaces.
- Avoids inpatient SH procedures when possible.
- Plans exit strategy before admission.

2. Unified Valve Clinic Infrastructure

- Single schedule for surgery and cardiology.
- Dedicated CT/transesophageal echocardiography resources on clinic days.
- Embedded imaging, anesthesia and HF.

3. Modern Imaging Capabilities

- Standardized CT protocols.
- 3D echocardiography and fusion tools.
- Imaging team aligned with procedural team from day one.

4. Coordinator-Led Operations

- RN or APP in command of referrals, follow-up and patient navigation.
- Manages post-procedure rhythm surveillance and complication protocols.

5. Integrated Financial Strategy

- Disease-based reimbursement models.
- Collaboration rewarded, not penalized.
- Administrative alignment on space, cost centers and staffing.

STRATEGIC GUIDANCE FOR PROGRAM GROWTH

For organizations developing or reinvesting in SH programs, success requires more than adopting new procedures. It demands building a resilient, team-centered infrastructure that can adapt to rapid changes in patient demand, regulatory shifts and technological innovation. Based on lessons from leading programs, five guiding principles emerge:

1

Don't build around procedures. Build around the team.

Individual procedures will rise and fall as indications expand and technology evolves. The true differentiator is the strength of the multidisciplinary team: cardiologists, surgeons, imaging specialists, APPs and coordinators working from a unified clinic model. Programs anchored in team design, not procedure silos, can quickly integrate new techniques as interventions (e.g., TTVR) enter the market.

2

Invest in clinic coordinators early.

Coordinators are the “glue” of a structural heart program, ensuring seamless navigation across referrals, imaging, procedures and follow-up. As patient volumes rise and care decentralizes into ASCs and outpatient settings, the coordinator role becomes even more critical to sustain efficiency, manage appropriateness, and reduce leakage.

3

Use protocols and pathways to reduce variability.

Standardization is the antidote to fragmented care. Shared scheduling templates, imaging protocols and discharge pathways reduce inefficiencies, minimize delays, and improve outcomes. High-functioning programs don't just adopt protocols they embed them across all sites of care, so patients can experience the same journey whether in a quaternary hospital or an ASC.

4

Choose technology that not only meets current needs, but positions you for expansion.

Imaging and lab design are now core strategic decisions, not support functions. As transcatheter valve interventions increasingly rely on echo, programs must prioritize delivering high-quality 2D and 3D transesophageal echo while preparing for the growing role of 3D intracardiac echo. Equally important is fostering excellent cooperation between imagers and interventionalists. This level of collaboration is a baseline requirement for SHD success.

At the same time, interventional labs themselves are evolving to solve new SHD challenges. Newer systems are designed with productivity in mind, enabling clinicians to guide applications from the control room or the tableside. SHD teams also demand greater positioning flexibility to enhance workflow around the patient and increasingly rely on echocardiography–fluoroscopy fusion, particularly for transcatheter edge-to-edge repair procedures. Technology choices should reflect a future-ready strategy: scalable, adaptable and designed to enhance both patient safety and operational efficiency across care settings.

5

Don't assume financial sustainability, design for it.

As CMS continues to migrate cardiovascular procedures into the outpatient space, reimbursement pressure will intensify. Programs must proactively design financial models that reward collaboration, align cost centers, and anticipate ASC migration. Building around “disease-based” reimbursement strategies rather than procedure- or site-based models will be key to long-term viability.

You need the right people, the right structure, and the right metrics.
**THAT'S WHAT DIFFERENTIATES
A NEXT-GENERATION SH PROGRAM.”**

CONCLUSION

The transformation of SH programs into intricate, collaborative service lines reflects a new era in cardiovascular care, one where clinical excellence must be matched by operational efficiency. With growing diversification and increased competition, especially from emerging centers, strategic alignment is no longer optional – it's essential for survival and growth. Future leaders in this space will be those organizations that recognize the profound value of investing in comprehensive infrastructure, in addition to cutting-edge equipment, to truly shape the future of patient care.



ABOUT MEDAXIOM MedAxiom, an ACC Company, is the cardiovascular community's premier source for organizational performance solutions. MedAxiom is transforming cardiovascular care by combining the knowledge and power of hundreds of cardiovascular organization members, thousands of administrators, clinicians and coders and dozens of industry partners. Through the delivery of proprietary tools, smart data and proven strategies, MedAxiom helps cardiovascular organizations achieve the Quadruple Aim of better outcomes, lower costs, improved patient experience and improved clinician experience.

Learn more at
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PHILIPS

ABOUT PHILIPS Philips is a leading health technology company focused on improving people's health and enabling better outcomes across the health continuum. Philips provides complete procedural solutions of systems, smart devices, disease-specific software and services leveraging advanced technology and deep clinical and consumer insights that help caregivers decide, guide, treat and confirm the right therapy for each patient. Philips is a leader in diagnostic imaging, image-guided therapy, patient monitoring and health informatics.

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