MEDAXIOM
AN ACC COMPANY

ADDRESSING DATA AND IMAGE INTEGRATION
AS A STRATEGIC IMPERATIVE IN THE CVSL

WHITE PAPER

In partnership with:

ScImage®

ADDRESSING DATA AND IMAGE INTEGRATION AS A STRATEGIC IMPERATIVE IN THE CVSL

SYNOPSIS

Strategic integration of patient data and diverse imaging modalities can position a program as a high performing tertiary or even quaternary leader in cardiovascular services. Coupled with advances in telehealth, cloud-based image and data integration removes geography as a barrier to support complex care management and seamless collaboration across subspecialties. Closer to home, data and image integration supported by streamlined workflows and intuitive reporting gives cardiovascular service line (CVSL) leaders the tools to optimize productivity and clinical and financial performance.

Improved technology tools can expand the cardiology workforce, an important priority over the next decade as demand for cardiovascular care is likely to outpace the supply of cardiologists in the US. In a field where innovative, disruptive technology is constantly emerging, end-to-end integration is no simple task. Legacy systems and outdated or under-resourced infrastructures make it so daunting that many CVSL leaders do not know where to begin. Often, we simply continue to acquire patches and add-on storage, creating costly, redundant and inefficient workflows. But what if it were simple? What if a turnkey product could offer a comprehensive solution?

This turnkey solution does exist, because one company understands the unique challenges inherent in this level of integration and function. As a private company with a customer-first philosophy, ScImage has a business model founded in listening to the cardiology customer. Hosted by Microsoft Azure, ScImage's PICOM365® is a unique, single database, end-to-end solution that can be scaled from small cardiology practices to complex health systems or even integrated health networks. The secure, comprehensive imaging and reporting workflow feature real-time advanced threat analytics along with data encryption at rest and in transit. Additionally, PICOM365's minimal IT requirements and medical device regulatory compliance eliminates barriers to entry and fully supports complex workflows with ease. ScImage uses an agile software development model designed to rapidly integrate emerging science and technologies, based on customer needs. As a scalable, cloud-based solution, PICOM365 is substantially less costly to a program at the point of purchase and in the longer term than the traditional, heavy-lift solutions needed to manage legacy system integration and migration to the cloud.

Some of the characteristics we might look for in the future state include:

A native cloud environment where integration of disparate technologies no longer slows clinical decision-making because bi-directional image and data share of current and prior studies can occur with the click of a mouse.

Any type of image, waveform, data or document from any modality and any vendor, is securely accessible from any location using any browser without a VPN.

Readers are no longer tethered to workstations because they have access to imaging studies and integrated third-party post-processing tools from anywhere.

Customized worklists, structured reporting tools with embedded appropriate use criteria (AUC), and bi-directional electronic health record (EHR) integration support accurate, timely reporting and billing

Multiple imaging modalities viewed concurrently from one source to support complex care decisions or invasive procedure planning.

Intelligent, customizable reporting features support clinical, operational and financial performance and registry reporting.

Minimal on site hardware footprint.

No downtimes for go-live or software updates and a 24/7 support team based in the U.S.

PicomSentry
"PACS in a Box" with IT-free deployment is ideal for outreach locations.

TOPIC OVERVIEW

Over the past decade deep advances in diagnostic and invasive approaches to manage cardiovascular disease have inundated programs with new technologies. While these advances have had a positive impact on care outcomes, they have worsened an already strained grasp on interoperability across the CVSL care settings. Many of these advances involve and rely on advanced imaging studies that require storage solutions beyond anything we might have imagined a decade ago. Practice integrations, hospital acquisitions, system mergers, and health plan networks create a convergence of disparate technology, further complicating the challenge of integrating patient health information.

As cardiovascular leaders we strive for a patient-centric model of care that improves access and health. To achieve that we need solutions to bridge the gaps between the data and images used to plan and deliver care across all settings in a diverse continuum of care. Cloud-based services resolve the issues of legacy systems, proprietary EHRs, and the disruptive nature of emerging technology. Rather than creating more complex technology algorithms to force interoperability, a native cloud solution with intelligent business rules offers options that are secure, scalable and agile.

The rapid shift to telehealth during the COVID-19 pandemic brought the gaps in healthcare data interoperability into sharp contrast. The deep losses in revenue from the pandemic shutdown will drive healthcare leaders to look for technology solutions to counterbalance downsized resources, while managing backlogs and positioning their organizations to be more agile in the future.

According to the Merritt Hawkins 2019 Physician Inpatient/Outpatient Revenue summary, cardiovascular physicians generate an average of $9.5 million for their affiliated hospitals annually (Becker's Hospital CFO Report, 2019). A shift to cloud-based integration now can leverage technology to support cardiovascular services as one of the top revenue-producing service lines for hospitals.

Here are three key issues that should place an end-to-end data and imaging integration solution for the CVSL near the top of your strategic initiatives to protect that critical revenue stream.
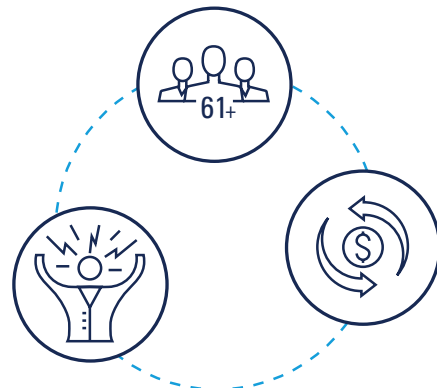
Cardiology Access Crisis

In 2019 one in four cardiologists was over the age of 61. Based on the projected number of physicians departing the workforce annually, the number of new fellows entering the workforce annually, and the continued growth in demand for care, access to cardiologists will likely worsen over the next decade (MedAxiom, 2019). The impact of the COVID-19 pandemic on this impending shortage has yet to be realized, and it could worsen the supply curve.

Provider Burnout

A recent survey by the American College of Cardiology found that one in three U.S. cardiologists reported burnout and four in ten said they are stressed (American College of Cardiology, 2020). Factors influencing stress include a hectic work environment, lack of control over workload and insufficient time for documentation. Our current technology platforms and workflows are contributing to provider burnout.

Shift from Volume to Value-based Purchasing

There is a shift in reimbursement methodologies across all payer types, moving from volume or episodic care to value-based care. This is pushing the cardiovascular community to focus on the use of evidence-based care guidelines to achieve better health outcomes at a lower cost. The data we need to better manage care with those guidelines exists within the technologies we have acquired, but it is highly fragmented.
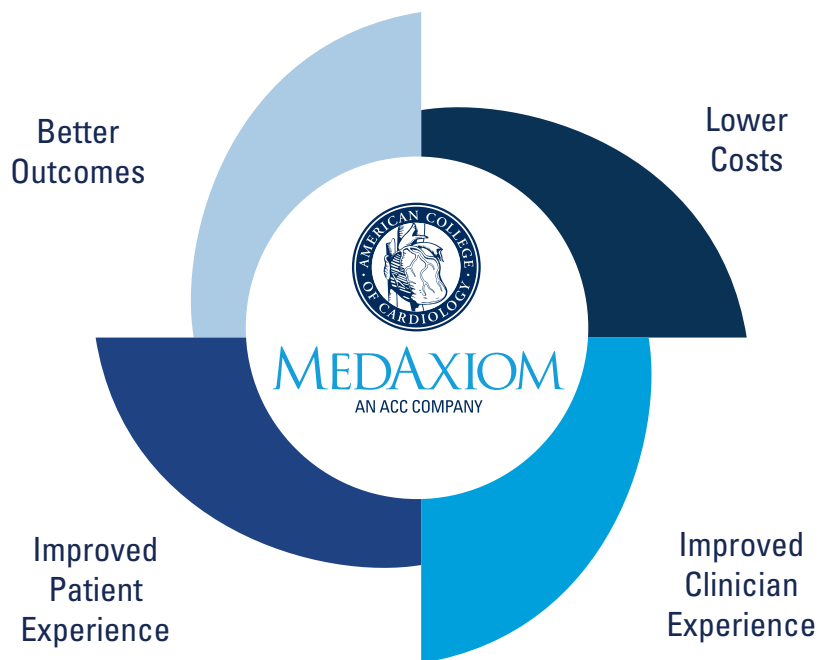
VALUE PROPOSITION

Quadruple Aim

The Quadruple Aim in healthcare is an approach to improving patient experience, improving the health of populations, reducing costs in healthcare, and improving the well-being of the care team.

MedAxiom believes that all strategic initiatives in the CVSL should tie back to the Quadruple Aim. While we work to regain an operating margin in the CVSL, the work to address the three key issues described above will align closely with our overall efforts to achieve the Quadruple Aim.

Better
Outcomes

Lower
Costs

Improved
Patient
Experience

Improved
Clinician
Experience

Leverage Technology to Maximize Provider Workforce

Traditional technology and workflows often limit the actual capacity of providers. Logging in and out of multiple systems, hardware limitations, software licensure that limits work to a specific workstation, network issues, firewalls, downtime, paper – the list is endless. Legacy systems and outdated or under-resourced infrastructures impact provider capacity. Technology should help maximize existing workforce, not limit it. Finding a solution to address these limitations is a value proposition for cardiovascular administrators and healthcare chief financial officers.
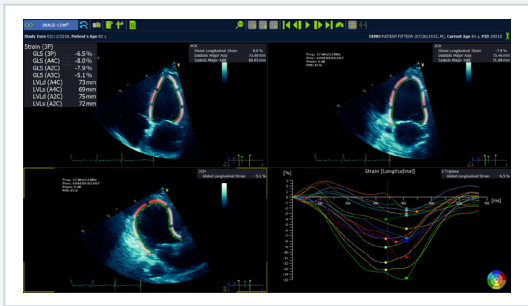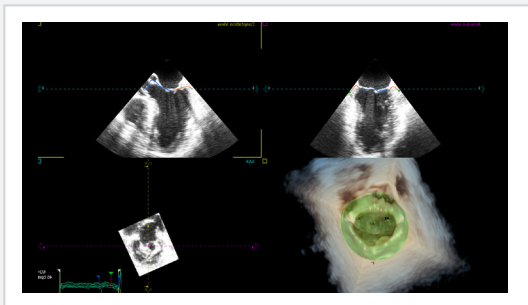
As a cloud-based, single database platform, access to patient data and images is simplified yet highly secure. Built on Microsoft Azure, PICOM365's secure end-to-end imaging and reporting workflow feature real-time advanced threat analytics along with data encryption at rest and in transit. Provider productivity is optimized across work settings. As workflows are designed and implemented highly intuitive analytic reporting features can help you track workflow design, supporting a *plan-do-check-act* approach to continual improvement in performance. System administrative features also support national registry data collection and reporting.

IN THE AMBULATORY CLINIC customized workflow and worklists minimize the potential for gaps in chart prep. Images and reports from disparate sources are quickly accessed because they are all aggregated as links in the database. With rapid, secure image exchange, clinical decision making, just-in-time consults, and referrals can happen smoothly, and in a fraction of the time traditional workflows required. In addition to reducing delays that extend appointment times and reduce capacity, these features provide an enhanced, patient-centric experience.

CARDIAC DIAGNOSTIC AND INTERVENTIONAL SERVICES are streamlined through order-based bi-directional EHR and imaging modality integration, accommodating echocardiography, nuclear cardiology, cardiac CT and MR, cardiac catheterization, stress test, holter, ECG management and other diagnostics. The versatile PICOM365 platform automates the collection and presentation of data, including modality measurements, technologist observations and baseline data points from the modality including hemodynamic and EP element mapping for analytics and SR reporting.
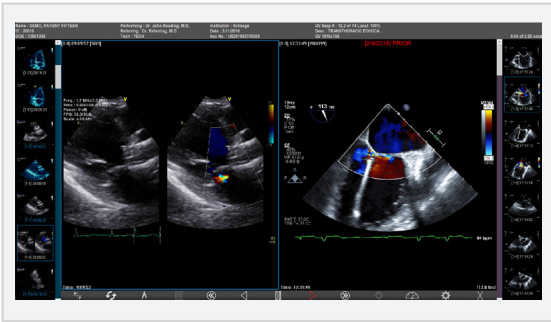

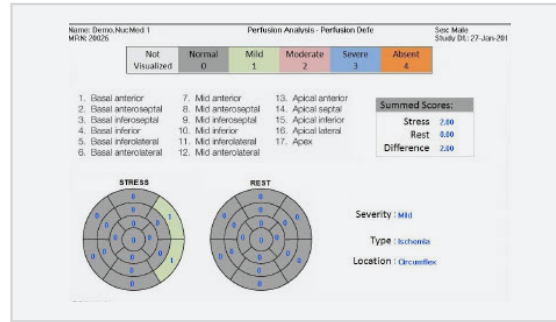

Embedded advanced Strain and 3D/4D

INTERPRETING PHYSICIANS manage workload with customized worklists and use side-by-side viewing for previous study comparison. Structured reporting tools support access to a study from any device, leveraging the PICOM365 highly secure, browser-agnostic environment with no plug-ins or downloads. The end-to-end web-based visualization, quantification and reporting provide access to the full cardiac picture from anywhere, at any time. The structured reporting tools provide drop-down functionality, easy customization, and built-in voice recognition that can be used for summary observations. Unique images may be highlighted in diagnostic and interventional reports, and imbedded links provide instant access to the entire study through a zero-footprint viewer.
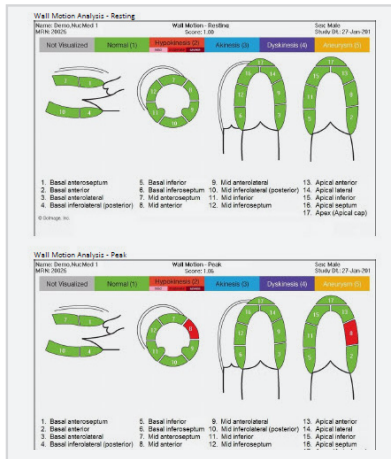

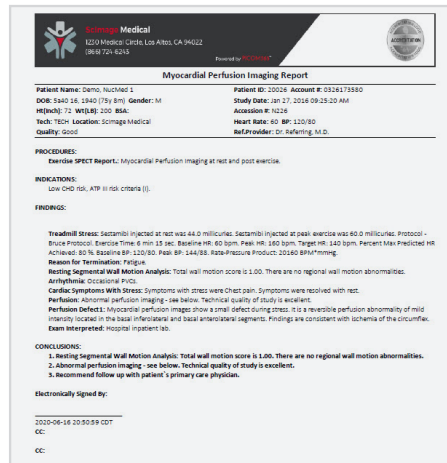Review current and prior images on a single monitor.

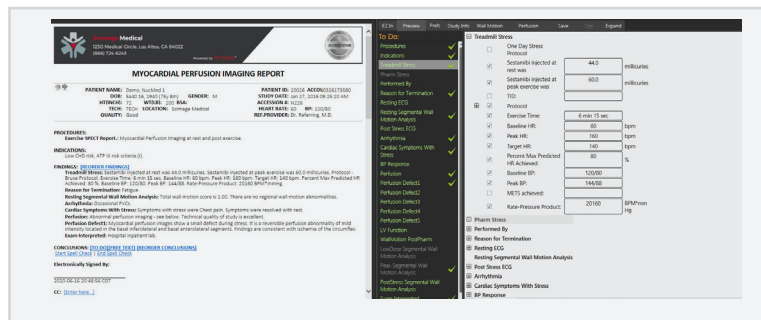Web-enabled access to nuclear cardiology post-processing and reporting tools.

Patient imaging and reporting timeline.

Wall-motion scoring with correlative text input into report findings.

Completely customizable structured reporting for all modalities.

Streamlined structured reporting with automated vitals and measurement mapping.
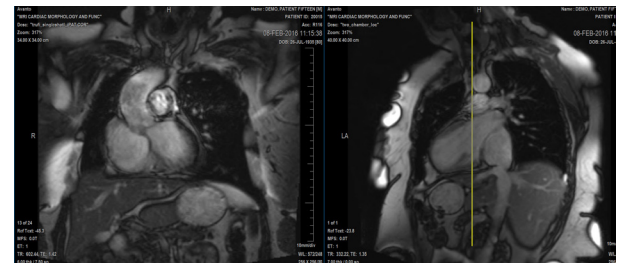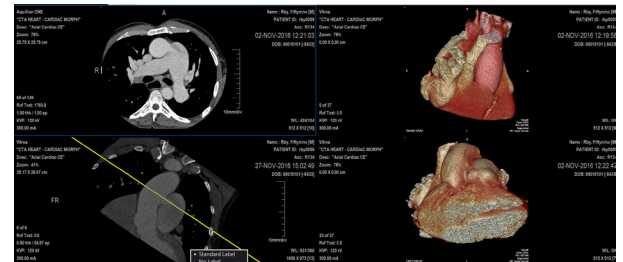
"PICOM365's cloud-centric reading and structured reporting liberates physicians to work when and where they want with a complete diagnostic toolset and independent of institutional IT roadblocks."

Sai Raya, PhD, ScImage CEO

IN THE ACUTE CARE SETTING the PICOM365 platform can provide a full service, enterprise clinical imaging and information solution integrating all modalities and data into the single database platform. Cloud native applications and services support securely integrating patient information across the continuum, solving the issue of legacy systems and outdated or under-resourced infrastructures. In the cardiac cath lab the PICOM365 platform can integrate imaging for up to five monitors for data display and almost limitless modality viewing, an excellent advantage for the team in complex, invasive procedures. In addition to the image management features for in-hospital services, the care team can quickly access ambulatory records and assemble the information required to plan and provide patient-centric care, improve outcomes and reduce length of care.

TELEHEALTH SERVICES are complimented by EHR integration and a full range of a secure diagnostic image management and reporting tools for remote physicians. The robust image exchange system will assure images are securely shared with patients, other physicians and healthcare facilities. A world-recognized support team stationed in the U.S. is available to assist physicians. Used in conjunction with your telehealth software, virtual cardiology management can be provided from any remote location.
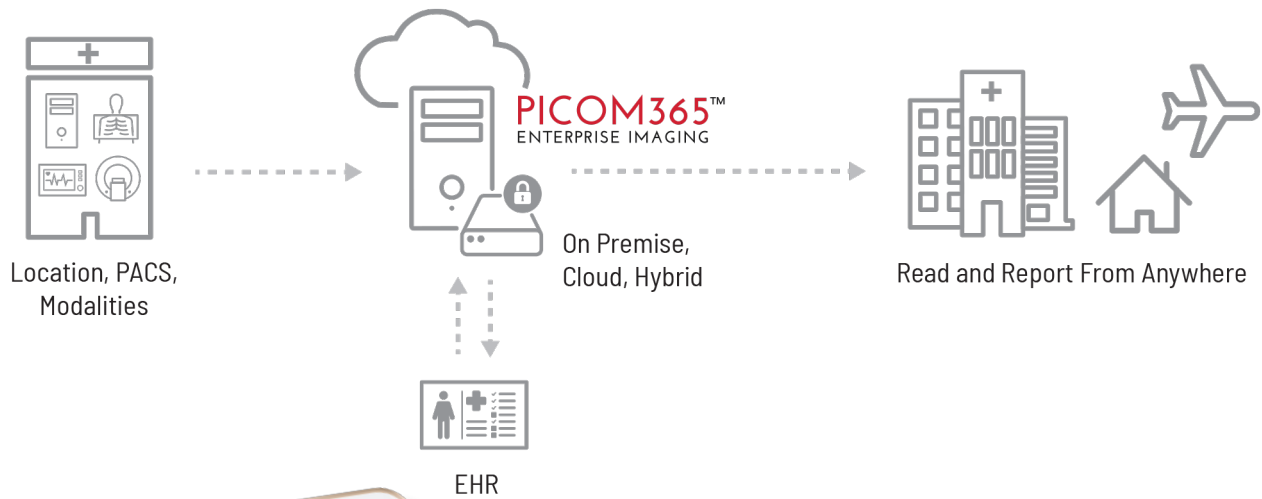
Address Technology Workflows to Improve Physician Experience and Counter Burnout

The PICOM365 cardiology suite is designed to uniquely address the needs of cardiologists, with workflows designed specifically for them. Inside that design, the ability to customize puts the clinician in charge of worklists, workflows and report content. With EHR integration less time is spent addressing the issues related to disparate technology and data, so more time may be spent interacting with the patient. Workload can be better managed and easily level-loaded among the cardiology team. Because readers are not tethered to workstations, they may choose their reading environment and better manage time with no worry about information security. PICOM365's full IT and medical device regulatory compliance capability eliminates all barriers to entry, allowing full functionality and ease of access from anywhere in the world. Additionally, PICOM365's minimal IT requirements and medical device regulatory compliance eliminates barriers to entry and fully supports complex workflows with access from anywhere in the world. A redesigned platform for technology and workflow is a value proposition to improve the cardiologist's experience, one step toward countering burnout and an effective tool for recruiting in an environment where competition for talent is intense.

Location, PACS, Modalities

PICOM365™ ENTERPRISE IMAGING

On Premise, Cloud, Hybrid

Read and Report From Anywhere

EHR

Use Integrated Care Guidelines and Analytic Reporting to Move from Volume to Value

The data needed to better manage care with evidence-based guidelines exists within the technologies we have acquired. It's just highly fragmented across diverse platforms and many encounters with multiple providers. As a cloud-based, single database middleware, PICOM365 integrates disparate sources in a manner that creates a more seamless view of patient data and imaging across care settings. Clinical guidelines may be integrated into workflow designs, assuring evidence-based interventions are aligned across care settings.

EHR integration and features embedded in the structured reporting tools support clinical flags to assure patients receive the right care, at the right follow-up intervals, by the right provider. Rapid, secure image and information share features assure that the care plan is communicated, and the patient gets into the appropriate cue for follow-up. These features are a valuable tool for all patient populations, and they are highly useful for the complex, high-risk populations targeted by a proliferation of alternative payment models in cardiovascular care.

CLOUD-BASED IMAGE AND DATA INTEGRATION IN ACTION:
FOOTHILL CARDIOLOGY, PASADENA, CALIFORNIA

Foothill Cardiology® Medical Group, Inc.
Diplomates, American Boards of Internal Medicine, Cardiovascular Diseases

MedAxiom member organization Foothill Cardiology Medical Group provides comprehensive cardiovascular services to a broad region in Southern California. Alex Durairaj, MD, FACC, president of Foothill Cardiology, described their post-cloud integration state as "far superior" to the onsite server solution the group previously had in place. In discussing the advantages of ScImage PICOM365 five years after implementation he states, "We are spending less money on storage and we have a better level of service. The transition was
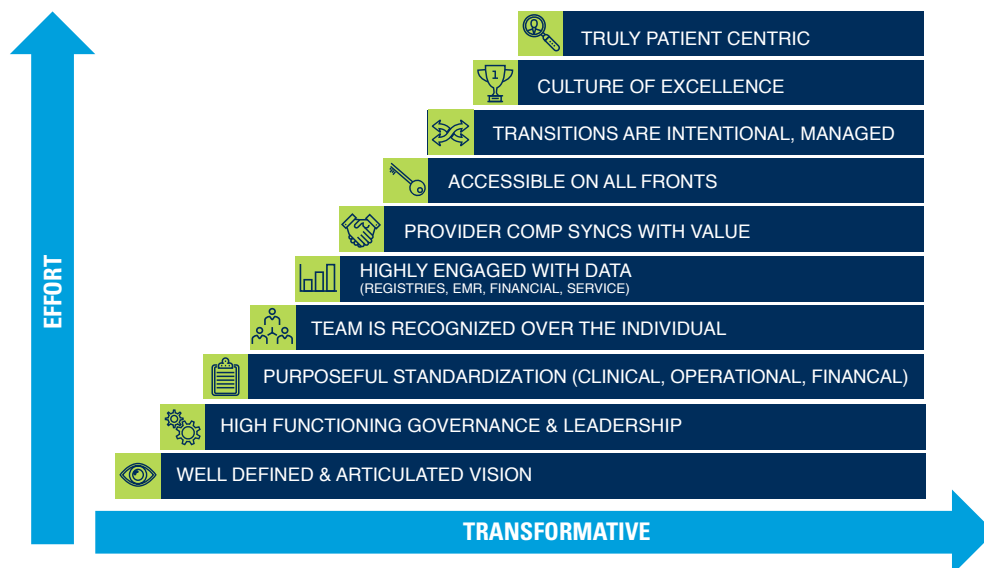
painless, and upgrades are invisible for the most part. Equipment agnostic interoperability, EHR integration, cloud storage, and the read-from-anywhere platform have made a real difference for us. If the on-call cardiologist gets overwhelmed we can level load reading work because our team can access studies from anywhere, at any time." In addition to the advantages of setting flags for key findings such as structural heart disease, he describes data and image share features as very helpful in referral management. "I simply send an email with an embedded link and the consulting physician can securely access an imaging report and the entire imaging study with a couple of mouse clicks," he says.

MEDXCELLENCE/ATTRIBUTES OF HIGH PERFORMING CVSLs

High performing cardiovascular programs strive for truly patient-centric care. MedAxiom has developed a framework to support cardiovascular programs in their improvement efforts. It scales the 10 attributes we observe in high performing programs to indicate the breadth and level of effort for each.

The framework can assist your program with all strategic decisions. An integrated data and imaging platform lends to several of the attributes we see in a highly-functioning, truly patient-centric CVSL: achieving purposeful standardization, optimizing clinical and operational data sources, expanding access and managing care transitions.

MedAxiom's Attributes of High Performing Cardiovascular Service Lines

EFFORT

TRULY PATIENT CENTRIC
CULTURE OF EXCELLENCE
TRANSITIONS ARE INTENTIONAL, MANAGED
ACCESSIBLE ON ALL FRONTS
PROVIDER COMP SYNCS WITH VALUE
HIGHLY ENGAGED WITH DATA (REGISTRIES, EMR, FINANCIAL, SERVICE)
TEAM IS RECOGNIZED OVER THE INDIVIDUAL
PURPOSEFUL STANDARDIZATION (CLINICAL, OPERATIONAL, FINANCAL)
HIGH FUNCTIONING GOVERNANCE & LEADERSHIP
WELL DEFINED & ARTICULATED VISION

TRANSFORMATIVE

FINANCIAL CONSIDERATIONS

A scalable pricing platform for the cloud-based PICOM365 solution helps to create a high-value business proposition for programs of all sizes and levels of complexity. From on-premise modality management to full scale enterprise data and image integration, capital investment on the front end, annual maintenance costs, and onsite infrastructure costs will be substantially lower than costs related to maintaining and upgrading legacy systems. Gated, rules-based data migration is an option to control the upfront costs that are traditionally encountered to migrate large volumes of data. A fully integrated cloud-based solution creates many opportunities to reduce cost and enhance revenue – several are listed below:

Improved workflow management creates improved efficiency and productivity, expanding access and supporting volume growth.

Studies may be accessed and interpreted from any location – allowing physicians to manage work time more efficiently, supporting faster turnaround times.

End-to end-encryption of data at rest and in transit – a level of security endorsed by the Department of Defense and many large health systems – protects your organization from costly malicious breaches.

Structured reporting tools are designed to assist the reader to quickly document relevant clinical findings and appropriate use information, improving the accuracy and timeliness of billing.

Worklists and workflows are designed to reduce the number of patients lost to follow-through and follow-up imaging.

Specialty referrals occur more quickly and require fewer human resources.

Remote telehealth solutions are complimented to expand a program's regional reach, and to mitigate large scale interruptions in traditional in-person clinic care.

Specialty clinic care teams spend less time gathering patient information; home monitoring data and episodic care across other provider settings allow the teams to interact timely, potentially avoiding ER visits and acute care admissions.

For inpatient teams, access to records across the continuum helps to reduce length of stay and unnecessary duplication in testing.

Administrative reporting features support ongoing assessment of key clinical, operational and financial indicators to support success with value-based purchasing models.

Improved technology experience can assist with provider fatigue, avoiding the potential loss of productivity or even help reduce provider turnover associated with burnout.

SUPPORTING WORK-LIFE BALANCE FOR PHYSICIANS THROUGH CLOUD-BASED TECHNOLOGY SOLUTIONS:
HEART AND VASCULAR INSTITUTE OF WISCONSIN, APPLETON, WI

In April 2019, the Heart and Vascular Institute of Wisconsin separated from their hospital partner. ScImage PICOM365 was chosen as their imaging solution when the ambulatory clinic moved to a new location. Larry Sobal, CEO, explained that there were a number of reasons for their decision to move forward with PICOM365. Importantly, they were able to minimize capital costs and ongoing maintenance costs – a big advantage when faced with the investment of creating an independent physician enterprise. In discussing the advantages of a cloud-based solution Sobal noted, "The improvement that can be gained in a physician's work-life balance when they are no longer tethered to a workstation is immeasurable. This should be considered an important strategic goal for hospitals and health systems trying to create integrated, high performing cardiovascular service lines."

IMPLEMENTATION STEPS

The following steps can be helpful to jumpstart a move to an enterprise, cloud-based data and imaging integration solution:

1. Complete assessments of your organization's ability to do the following:

- Quickly and efficiently access and share patient data and imaging across the continuum

- Create and hardwire workflows, flags and processes within your technology to support the use of evidence-based guidelines, assuring patients receive the right care, at the right time, by the right provider – ultimately supporting improved clinical outcomes and success in value-based reimbursement

- Use technology to optimize workflows, maximize your cardiology workforce, grow

2. Engage physician leaders and C-suite leaders

Engage physician leaders and C-suite leaders in a conversation about the attributes of a high performing, patient-centric cardiovascular program to begin socializing the idea of an enterprise data and image integration solution as a strategic priority. This issue is likely top of mind already – the harder work will be moving them past the hurdle of what is perceived to be an expensive, massive project to an understanding that an affordable turnkey, secure cloud-based solution exists.

3. Share your assessment findings

Share your assessment findings with key administrative, clinical, quality and information technology leaders in the organization. If the tasks can be accomplished, how hard are they and how much time and resources are required to accomplish them.

4. Discuss the relevance

Discuss the relevance of an enterprise, cloud-based data and imaging integration solution in the overall organization's vision, mission and strategic priorities. Communicate the role of an enterprise data and image integration solution to help achieve the Quadruple Aim.

5. Work with your physician or administrative dyad

Work with your physician or administrative dyad to move a business plan forward.

CONCLUSION

Integration of patient data and imaging modalities is a strategic imperative to improve cardiovascular care delivery. It provides a framework of tools to support the Quadruple Aim and address the many access, complex care and technology integration issues now faced by cardiovascular organizations. While this is not news to CVSL leaders, the recent COVID-19 pandemic has created a catalyst for action. Technology solutions can be leveraged to help recover from deep losses in revenue. Those same technology solutions must be used to create and sustain care delivery models if we are faced with catastrophic events in the future. They must also address the challenges that predate the pandemic and persist after it. Fortunately, achieving such a level of integration is not the heavy lift we tend to perceive it as. ScImage's PICOM365 provides a secure, turnkey, end-to-end cloud-based cardiovascular data and image integration solution where disparate technologies are no longer a barrier to clinical workflows.

ABOUT SCIMAGE Founded in 1993, ScImage remains a private, customer first company with a mission to provide innovative enterprise imaging solutions to the healthcare industry. ScImage's unique single database PICOM365 enterprise platform delivers end to end imaging workflow for Cardiology, Radiology, Women's Health, Orthopedics, Ophthalmology and more. Scalable from a single physician practice to a multi hospital enterprise, PICOM365 is customizable and can be delivered on premise, in the Cloud, or as a hybrid. The perfect synchrony created between on site and Cloud resources allows PICOM365 to provide secure VPN less image exchange solutions among legacy silo systems, Cloud users, and various EHR systems.

Learn more at www.scimage.com.