

PHILIPS

Position paper

Forging
new paths in
**Cardiovascular
Care**

Forging new paths in Cardiovascular Care

Health systems today must increasingly focus on predicting, preventing and delivering better care for the growing number of cardiovascular patients across the continuum of care. Yet, at nearly every turn, they face barriers. Clinicians, who are seeing patients with higher acuity levels and more co-morbidities are burdened with disconnected data and complex technology. Patients, who now pay more out of their own pockets for care, are frustrated with having to undergo repeat tests or tests with low value, not having proper access to care and uncoordinated care. Care providers are forced to do more with less as the shift toward value-based care continues. The challenges are many.

Despite these challenges, it's encouraging to look at the great progress being made to cut through the complexity and break down these barriers. Like a leading cardiovascular center that is integrating patient data and cardiovascular care teams to treat more patients with improved consistency and efficiency, reducing length of stay and improving patient's overall quality of life. Or a regional hospital reducing its general floor code blue events with early detection of clinical deterioration. Or a leading medical center reducing readmissions and lowering the cost of care for heart failure patients with innovative home care programs. And let's not forget the leading hospital that is deploying a community-based first responder program to help save lives due to sudden cardiac arrest.

Philips knows these stories because we've been there, working collaboratively with these health systems to break down boundaries, remove complexity and deliver not only customized approaches but deliver at scale a more seamless approach to cardiovascular care when, where and how people need it the most.

Innovation. Transformation. Collaboration. That's what inspires these health systems to partner with us. Industry-leading technologies coupled with an approach that forges new paths in cardiovascular care delivery. A relentless pursuit to make life better. A vision of more seamless care that breaks down boundaries and reduces complexity. This is what drives us. This is Philips.

Comprehensive solutions that break boundaries

As healthcare delivery changes, so must our approach to helping our customers address those changes. Today we're focused on combining industry leading technologies with an approach that moves us from a transactional to a transformational relationship utilizing a consultative approach that considers your entire care process, not just your equipment needs. And always, putting the needs of patients and care providers first.

We believe that innovation is only meaningful when it leads to demonstrable success for our partners.

We help you optimize and redesign operational workflows and clinical pathways to reduce variation, facilitate appropriate utilization, eliminate "waste", avoid complications and improve patient and staff experience. From emergency care, acute care, and diagnostics, to treatment and home care, we help

support earlier, more confident diagnoses, help optimize the path to treatment and recovery, and establish ongoing care management with solutions that help integrate patient data and programs to help improve care delivery and reporting. In complement to our advanced cardiac equipment and systems, data analytics, intelligent applications, consulting and telemedicine solutions help standardize best practices, manage risk and smooth patient transitions from acute to non-acute settings and the home for better individualized care while managing costs.

As we've listened to our customers, we've repeatedly heard four key areas of need: drive improved treatment and outcomes, simplify data and insight gathering, remove excess costs from the system, and improve the care experience for patients and providers. In response, we've developed an integrated portfolio of products and solutions, coupled with a hands-on consultative approach and award-winning services¹, that are enabling healthcare providers to make strides in these areas today.

Simplifying data and insight gathering – while increasing its security

Cardiovascular care is complex. Clinicians are often burdened with data that often resides in disparate systems across multiple settings. Getting a holistic, longitudinal view of each patient has proven surprisingly difficult. Yet without quick access to that information, clinicians are slowed down in their ability to make a confident diagnosis to identify the optimal care or treatment pathway.

Together we need to find ways to simplify care delivery across the many touchpoints and care providers that care for cardiovascular patients and deploy technology and workflows that help organize healthcare around the patient to deliver better outcomes with a goal to make care more seamless for patients and care providers. Philips IntelliSpace Cardiovascular Image and Information Management System makes that vision a reality with quick and easy access for care providers from virtually anywhere. This is meant to break down barriers for care providers across the continuum of cardiovascular care with longitudinal views of the patient data and clinical and collaboration tools for multiple providers across locations.

Solutions that deliver faster, more precise insights are especially critical in cardiovascular care, when every minute counts. Take for example the fact that 70% of cardiac arrest patients show signs of respiratory deterioration up to eight hours prior to a cardiac arrest². If clinicians can accurately measure respiration rates in at-risk patients, they can prevent many cases of sepsis, the leading cause of death in hospitals³, and subsequent cardiac episodes.

We tackled this issue by creating IntelliVue Guardian with Early Warning Scoring (EWS), a solution that aids the clinician in identifying subtle signs of patient deterioration much earlier by providing an automated, comprehensive view of the patient's condition while better utilizing staff resources. Beyond innovative technology, we engage with our customers with an optional implementation and change management program that includes planning, execution, staff education and post-implementation support. Saratoga Hospital in New York was able to reduce their code blue events over a four-year period⁴.

Data security is, of course, a huge and growing issue. A recent Medical Group Management Association (MGMA) poll found that only 55% of healthcare professionals believe their IT infrastructure is secure⁵. As a company focused in health technology solutions, we are vested in this important area. Our commitment to security led us to form our own Security Center of Excellence to develop, deploy and support advanced security features for our products and services as well as conduct continuous risk assessment and incident response activities.

Driving improved treatment and outcomes

An estimated \$200 billion is spent annually on excessive testing and treatment⁶, and as much as 5% of diagnostics contain errors that may have a negative impact on patients⁷. This is a barrier and complexity that we continue to tackle with our innovations. If we want to help providers deliver excellent cardiovascular diagnosis and care, new technologies must allow them to see more, sooner, and less invasively.

The recent introduction of Philips Azurion, our next-generation image guided therapy platform designed with and for interventional cardiologists sets a new standard for minimally invasive procedures. It helps optimize lab performance and deliver outstanding user experience. Clinicians benefit from intuitive interfaces, real-time visualization and data integration, in combination with high image quality.

Our recent acquisition of Spectranetics Corporation deeply strengthens our offerings in image-guided therapy solutions and complements our recent investments in the Azurion platform as well as the 2015 acquisition of Volcano.

EPIQ Ultrasound with HeartModel^{AI} is an example of how we are using anatomically intelligent 3D technology to speed more confident diagnoses. It allows cardiologists to gather heart measurements faster and reduce variability. A study⁸ of 180 patients across six sites provided evidence that this technology could help save time and gather accurate data.

Helping you reduce costs

Doing more with less is a requisite under value-based care. In addition to the breakthroughs with better data, care collaboration and treatment solutions, where and how care is delivered can greatly reduce costs for cardiovascular patient populations and providers. For example, telehealth and care management programs can help lower costs within the hospital walls as well as provide ongoing care to keep patients healthier in their homes. In the hospital, Philips eICU offers health systems a cost-effective approach to staffing their ICUs by supplementing their intensive care teams with centralized, remote monitoring from skilled intensivists combined with proprietary algorithms and clinical decision support. This solution allowed Emory Healthcare to save an estimated \$4.6 million in just 15 months⁹. Other hospitals using similar programs have seen a reduction in mortality of 20% and reduction of length of stay by 30%.^{10,11,12}

Keeping people healthy at home has become a greater priority for health systems since the reimbursement system began rewarding providers for shifting care to lower cost settings and penalizing them for 'avoidable' readmissions and utilization. Philips ambulatory telehealth programs allow you to monitor patients with multiple chronic conditions such as congestive heart failure, from the convenience of their home. Our connected digital devices alert caregivers to changes in key metrics like weight and blood pressure that can be an indicator of a pending crisis. One health system reduced hospital admissions by nearly 50 percent managing high-cost patients; reduced overall costs of care by 34.5 percent; reduced the number of days in hospital by 50 percent and reduced the 30-day readmission rate by 75 percent.¹³

The right care at the right time
in the right place - **that's health
with no bounds.**

Improving the care experience for patients and providers

Cardiovascular patients can be challenged by fragmented, and sometimes inefficient experiences with their health management. Today, having become accustomed to the convenience of online banking, shopping and entertainment, patients are becoming less willing to accept poor service and complex, disconnected care. We're responding by helping health systems redesign their processes and even their facilities to deliver a better experience for their patients and staff. With a focus on patients and care providers, our consulting teams work with health systems to revise and design workflows, modify layouts and improve staff communication in their cardiac catheterization and electrophysiology labs. As part of our long-term strategic partnership with Marin General Hospital, we worked to identify 23 areas of improvement for the invasive imaging department including Interventional, Catheterization and Electrophysiology labs. At Westchester Medical Center Health Network, hospital staff worked with Philips consultants to optimize cardiology services including strategic guidance and hands-on implementation support, which led to lower costs, enhanced patient experience, improved staff satisfaction and a 20% reduction in patient wait times.¹⁴

Achieving more, together

The vision of health with no bounds will become even more critical as healthcare continues to shift its focus away from sick care to prevention and healthy living. Improving heart health is at the core of what we do.

We have 125 years of innovation experience, and industry-leading positions in cardiology solutions across the health continuum, from healthy living and prevention to diagnosis, treatment and home care, in both personal health and professional healthcare solutions. We harness decades of clinical expertise, services and technology innovation to tailor a partnership that addresses your unique challenges.

Our aim is to break boundaries, reduce complexity, deliver meaningful innovation, and realize our vision of improving the lives of 3 billion people a year by 2025. We're excited about contributing to the many possibilities the future holds – from creating groundbreaking innovations in precision medicine in cardiology, to designing managed cardiac catheterization labs, to developing and applying artificial intelligence and machine learning technologies to enable care that is predictive, integrated and precise.

To move toward more seamless cardiovascular care, together we must continue to break down the barriers between departments and specialists, create breakthrough innovations, eliminate the obstacles separating patients and caregivers, and cross the boundaries that exist between healthcare settings and people's homes. Because today, health knows no bounds and neither should healthcare.

1. For two years in a row, Philips cardiovascular systems have ranked #1 in 28 service performance measures. Our use of innovation to drive industry standards has also ranked #1 for six consecutive years.
2. *Lippincott, Williams and Wilkins 2012
3. <http://jama.jamanetwork.com/article.aspx?articleid=1873131&resultClick=3>
4. Results from case studies are not predictive results in other cases. Results in other cases may vary.
5. <https://www.healthcare-informatics.com/news-item/cybersecurity/only-half-healthcare-professionals-report-their-it-infrastructure-safe-cyber>
6. <http://money.cnn.com/2017/05/20/news/economy/medical-tests/index.html>
7. <http://qualitysafety.bmj.com/content/23/9/727>
8. Lang RM, Badano LP, Mor-Avi V, Afilalo J, Armstrong A, Ernande L, Flachskampf FA, Foster E, Goldstein SA, Kuznetsova T, Lancellotti P, Muraru D, Picard MH, Rietzschel ER, Rudski L, Spencer KT, Tsang W, Voigt JU. Recommendations for cardiac chamber quantification by echocardiography in adults: An update from the American Society of Echocardiography and the European Association of Cardiovascular Imaging. *J Am Soc Echocardiogr.* 2015;28:1-39. 2 Tsang W, Salgo IS, Medvedofsky D, Takeuchi MMD, Prater D, Weinert W, Yamat M, Mor-Avi V, Patel AR, Lang RM. Real-Time Automated Transthoracic Three-Dimensional Echocardiographic Left Heart Chamber Quantification using an Adaptive Analytics Algorithm. *JACC Cardiovasc Imaging* (in press).
9. Abt Associates. Evaluation of Hospital-Setting HCIA Awards. Prepared for CMS; Baltimore, MD: 2016.
10. Lilly C.M. et al., "Hospital mortality, length of stay, and preventable complications among critically ill patients before and after Tele-ICU reengineering of critical care processes," *Journal of the American Medical Association*, vol. 305, no. 21, pp. 2175–2183, 2011.
11. Lilly C.M. et al. TeleICU: Experience to Date, *Journal of Intensive Care Medicine*, September 13, 2009; 1-7
12. New England Healthcare Institute, *Critical Care: Critical Choices: The Case for Tele-ICUs in Intensive Care*. December 2010.
13. Dahl, D., Khurana MD, H. (2015). Impact of an intensive ambulatory program on both financial and clinical outcomes in Banner Health, revisit the initial cohort with extended follow-up. Unpublished internal study.
14. Results from case studies are not predictive results in other cases. Results in other cases may vary.

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