

WHITE PAPER

9 Ways to Boost Cardiovascular Service Line Margins and Quality



How real-time clinical performance feedback at the point of care can reduce avoidable costs due to care variation from best practice—dramatically improving cardiovascular service line margins, while increasing quality and satisfaction

HealthView Analytics

LUMEDX
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Making a difference in healthcare

White Paper: 9 Ways to Boost Cardiovascular Service Line Margins and Quality

Concentrating on the root causes of care variation from best practices can add more than \$1 million per year to margins, improve quality and increase patient satisfaction.

Table of Contents

- Cost Reduction and Clinical Care Variation 3**
 - Boost Performance with a Three-Pronged Strategy to Reduce Care Variation. 4
 - 1. Leverage the EHR Investment to Create a Cost Reduction Engine 4
 - 2. Attack Clinical Care Variation Across the Service Line 4
 - 3. Transform Physician Behavior with Embedded Performance Feedback 4
- Linking Cost, Quality, and Patient Satisfaction in the Clinical Data. 5
- Leveraging the EHR to Create a Cost Reduction Engine. 6
- Near Real-Time Concurrent Abstraction: The Duke Model 7
- 9 Ways CV Service Lines Can Practice Value-Based Healthcare and Save \$1 Million+ Annually 8**
 - 1. Delivering Accurate Stress Testing. 8
 - 2. Driving Down 30-Day Readmission Rates. 8
 - 3. Switching from Femoral to Radial Access 9
 - 4. Lowering Surgical Site Infections. 9
 - 5. Controlling Overtime 10
 - 6. Tracking and Optimizing Contrast Usage. 10
 - 7. Promoting Same-Day Discharge 11
 - 8. Tracking CV Surgery Vent Time. 11
 - 9. Reducing Waste in Blood Utilization 12
 - Providing Near Real-Time Feedback in Point of Care Systems 13
- About LUMEDX 15**



Cost Reduction and Clinical Care Variation

“If you can’t deliver care at a reasonable cost, you are not going to survive as a service line.”¹

Linda Gillam, MD, MPH, FACC, chair of cardiovascular medicine, Atlantic Health System

Cardiovascular service lines are a volume business, performing thousands of procedures each year. While healthcare organizations were traditionally paid for each procedure, they are increasingly paid per episode of care, no matter how many tests or procedures are performed during that episode. Yet unlike leaders of other volume businesses, clinical service line managers often lack in-depth data on their cost structures, the granular drivers of costs and the impact of these inefficiencies on patient and physician satisfaction. The lack of information may be the single largest inhibitor of service line performance improvement, and the reason many programs will fail to compete profitably in the value-based care era.

Amazon tracks more than 700 metrics to determine exactly what goes into providing an exceptional customer experience at a low cost. Many service line managers, on the other hand, continue to rely on incomplete retrospective clinical data, paired with outdated and

inaccurate accounting methods for understanding their costs—making it difficult to forecast and control quality and costs under fixed price payment models.

DRG, ICD, and CPT code information provide high level cost-per-case data, but provide little or no insight into the reason why costs vary from provider to provider for the same type of case.

Often, in-depth analysis of costs will reveal that local care variation—variation from best practice in how different providers treat similar patients in similar cases—is a key driver of uncontrolled, and typically avoidable, rises in costs. Obtaining this provider-level data from enterprise coding data is a time-consuming task, and linking it back to the clinical idiosyncrasies of the individual outlier cases often requires manual chart reviews of electronic records. Moreover, even when managers are able to marry the clinical and financial data, it’s often outdated, with opportunities for improvement missed.

¹ <https://www.dicardiology.com/videos/video-value-cardiovascular-service-line>

Boost Performance with a Three-Pronged Strategy

Operating inefficiencies and avoidable costs are strongly associated with poor provider care team decisions and practices. Preventable Medicare hospital readmissions alone total some \$17 billion annually.² Evidence-based medicine has long been cited as the cure. At its heart, this entails using data generated in aggregate best practice medicine to inform individual caregiver choices.

National standards of best practice medicine are established in many—though not all—areas of cardiovascular care, through professional societies, national quality boards and clinical trials. Yet there is wide variation in compliance with best practice. As a result, the promise of data-driven healthcare transformation remains too often unrealized.

In this paper, we'll explore a three-pronged strategy for driving best practice medicine to improve service line operating margins, increase quality performance and enhance patient and physician satisfaction.

1

Leverage the EHR Investment to Create a Cost Reduction Engine

Top tier organizations have made significant investment in EHR infrastructure in the past five years. Thanks to rapid deployment under the Hitech Act, the vast majority of healthcare providers have a functioning EMR, and virtually all data and images are available in digital form. National patient registries and meta-analyses of large data sets have provided best practice clinical standards across virtually all medical specialty areas. Yet today most of those datasets are in silos. Integrating them with real-time interoperability and embedded analytics turns an EHR into a powerful cost reduction engine.

2

Attack Clinical Care Variation Across the Service Line

Studies show that reducing variations in care from best practice in even a few key services can contribute millions per year in operating profits, even for top-quality healthcare systems. Typically, this involves moving the bottom 25 percent of caregivers up to the level of expected benchmark performance. Given cardiovascular volumes and costs, this strategy can easily contribute seven-figure annual cost savings and revenue enhancement.



3

Transform Physician Behavior with Embedded Performance Feedback

Transforming care requires more than a series of one-time ad hoc performance improvement initiatives. As with most other professionals, physicians learn by receiving immediate and continuous feedback on their performance in comparison with peers, as well as national and institutional standards of care.

Real-time analytics—embedded in the EHR workflow or mobile device—leverage the provider's natural competitiveness and desire to achieve high quality care and patient satisfaction at the lowest costs.

² <https://revcycleintelligence.com/news/preventable-readmissions-cost-cms-17-billion>

LINKING COST, QUALITY, AND PATIENT SATISFACTION IN THE CLINICAL DATA

Studies have shown a direct correlation between the three Triple Aims—improving quality often reduces costs while resulting in greater patient satisfaction. Reduced patient lengths of stay (LOS) was recently correlated with both lower costs and fewer readmissions in a large UK analysis of 324,000 elective PCI patients.³ As we know, productive cost reduction is more complex than simply reducing access to high-cost care settings.

In a study cited in *Revcycle Intelligence*, the Advisory Board found that high-quality hospitals delivered lower cost care for approximately 82 percent of diagnoses.⁴ Analyzing healthcare cost and quality data from 468 hospitals from April 2014 to March 2017, they found that the average hospital spent up to 30 percent more than the highest quality hospitals to deliver care with comparable or lower quality outcomes. Researchers estimated that closing just a quarter of the cost gap for less than 10 percent of the conditions analyzed could net over \$4 million in annual savings for a typical hospital and over \$40 million for 10-hospital system—without compromising quality.

Of course, as with any human practice, care variation is to be expected and much of it is difficult to eliminate. Practical efforts at reduction typically focus first on bringing the bottom tier of providers up to the organization's median or expected performance benchmark.

Generating this savings requires granular diagnostic and therapeutic data that is not readily available in the EMR. Data analysts at LUMEDX HealthView Analytics studied standardized 2017–2018 datasets from more than 60 U.S. heart and vascular programs and identified a handful of care practices in the cardiac cath lab and cardiac surgery in which significant savings were possible. Targeting a few adverse outcomes such as bleed complications and acute kidney injury yielded potential savings of more than 30 percent in these areas and up to \$1 million annually for the average facility.

Large institutions with significant investments in data analytics and process improvement methodologies have achieved remarkable successes.

According to the Healthcare IT News, Minnesota-based Allina Health Systems achieved \$45 million in measurable savings over five years by assessing clinical care variation and other sources of adverse outcomes in more than 50 individual projects across the multi-facility enterprise.⁵ The Allina Health IT commitment included linking an estimated 75 sources of patient clinical, cost accounting and



Targeting a few adverse outcomes such as bleed complications and acute kidney injury yielded potential savings of more than 30 percent in these areas and up to \$1 million in margin contribution annually for the average facility.

satisfaction information.

Yet not all organizations are immediately capable of this level of financial and institutional commitment to the data infrastructure. In the sections that follow, we'll discuss how any healthcare organization can immediately begin to identify key care variation sources, quantify the savings, and deploy an improvement program yielding seven-figure savings in top hospital service lines in the first year.

3 <https://www.cardiovascularbusiness.com/topics/coronary-intervention-surgery/longer-hospital-stays-pci-increase-readmissions>

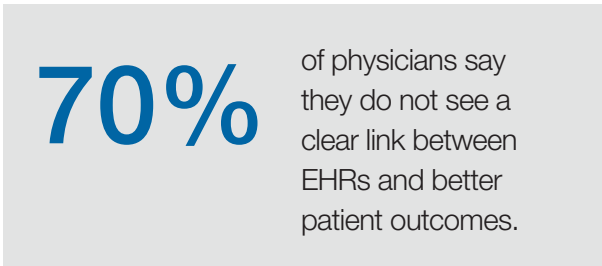
4 <https://revcycleintelligence.com/news/care-variation-reduction-key-to-improving-care-quality-costs>

5 <https://www.healthcareitnews.com/news/allina-applies-analytics-patient-data-save-45-million-over-5-years>

LEVERAGING THE EHR TO CREATE A COST REDUCTION ENGINE

Despite the massive investment in Electronic Health Record (EHR) technology since the mandate of the 2009 Hitech Act, improvements in patient care due to use of the available digital data have been difficult to document.

According to a 2017 Inovalon/Quest Survey, 70 percent of physicians say they do not see a clear link between EHRs and better patient outcomes.⁶ Though the EHR is supposed to be more than the EMR, much of the hospital IT work over the past decade has focused on ordering, scheduling, patient charting and billing.



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Further, the leading EMR technologies for hospitals were not originally designed to capture discrete clinical data from the point of care diagnostic and therapeutic systems manufactured by vendors like GE, Philips and Siemens. Ancillary systems such as diagnostic imaging and patient quality registries often occupy separate data silos, sending reports or select batch transfers to EMRs and enterprise data warehouses.

Efforts at interoperability are making inroads in bridging the gap, but many of them are simply focused on creating an integrated real-time patient record, rather than on capturing the normalized alphanumeric values required for deep mining of aggregate outcomes data.

According to HIMSS, most larger healthcare organizations have adopted an enterprise data analytics strategy. Often this entails deploying data warehouse and business intelligence toolkits supplied by third party vendors such as IBM. These tools often leave the content itself—data marts and schemas, along with visualization formats of Key Performance Indicators (KPIs)—to the customer to define according to its needs. The organization must then build a staff of business analysts to field the exponential growth in requests for custom dashboards and data mining to support the operational and financial needs of each area.

Special projects are then created to mine data from appropriate sources and create the desired analytic KPIs. Because these data projects are often ad hoc and special purpose, they frequently rely on one-time batch transfers of datasets and largely manual Extract Transfer and Load (ETL) procedures. Further, the readily available datasets at the enterprise level—such as admission, discharge, billing, labs and medications—are inadequate by themselves to address the deeper sources of avoidable costs incurred in the clinical workflows themselves.

Too often, no matter how large the staff, data request turnaround times fail to meet the fast-changing needs of service line operating environments. This means that the enterprise C-Suite consumers of data analytics may be satisfied with the output of the strategy, while service line leaders may lack the tools they need to effect care transformation.

The logical solution to this problem is to create a data infrastructure that pulls clean, normalized datasets in near real-time from clinical workflow systems comprising the EHR and departmental clinical workflow modalities and subsystems.

6 <http://inovalon.com/press-releases/2017/new-study-physicians-lack-right-tools-close-costly-gaps-healthcareit>

NEAR REAL-TIME CONCURRENT ABSTRACTION: THE DUKE MODEL

Like many organizations, the Duke University Cardiology and Heart Surgery Program wanted to gain insights more quickly and easily from its Epic EMR and specialized patient registries such as ACC and STS.⁷ Ensuring accurate data and complete reports, efficient use of human resources, and effective communication were key.

Working with its IT vendors, including the HealthView Analytics team at LUMEDX, Duke developed a strategy it calls Concurrent Abstraction (CA) in near real-time (nRT).

Once deployed, collaborating team members were able to capture discrete data as part of their documentation workflow during the case. “Basically, all evaluation and cleaning up of data happens during the case at the point of care,” said Joe Kelly, Duke’s Administrative Director of Cardiovascular Informatics and Quality Improvement.

Concurrent data abstraction is deployed to create a clean, normalized dataset. Though the standardization of clinical nomenclature has improved with coding formats such as DRG, ICD and CPT, there is still wide variation in how specialized providers refer to diagnostic and therapeutic parameters in their modality environments and reporting. Matt Esham, Director of Analytics and Business Intelligence at LUMEDX, offers the table below derived from working with its customers—showing that the same organization might capture data from the same Cardiac Echocardiogram in up to 13 different formats.

Because even slight changes to workflow require clearly defined procedures and training, organizations will need to develop a comprehensive plan to assure that data interoperability, staff training, and desired analytics output are carefully orchestrated. With this foundation in place, they’re ready to make the most of their EHR investment.

⁷ <https://www.lumedx.com/Data/Sites/1/media/pdf/case-studies/duke-cs.pdf>



Real-world sample of 13 ways one hospital captures the same type of Echocardiogram

Category	2017	Total
Non-Invasive	40936	40936
2 D ECHO COMPLETE	1	1
2D ECHO & DOPPLER	3	3
2D ECHO AND DOPPLER	3	3
2D ECHO AND DOPPLER COMPLETE	1	1
2D ECHO DOPPLER COMPLETE	2	2
Adult	36423	36423
Echo	31	31
ECHO 2D AND DOPPLER COMPLETE STUDY	2	2
Echo 2D And Doppler COMPLETE Study_NB	3857	3857
ECHO DOPPLER	2	2
Echo Transthoracic With Contrast_NB	28	28
Transthoracic Echocardiogram	582	582
TTE	1	1
Total	40936	40936

9 Ways CV Service Lines Can Practice Value-Based Healthcare and Save \$1 Million+ Annually

While some of these examples may seem familiar to an experienced CV service line administrator, all of the key focus areas have been measured by HealthView Analytics data analysts who have continually found that even top heart and vascular programs have significant room for improvement.

1

DELIVERING ACCURATE STRESS TESTING

In stress testing, we have two key problems: False positives and false negatives.

- False positives increase the number of patients sent to cath labs. Not only is cost of care increased unnecessarily, but so is the risk to the patient because catheterization is an invasive procedure.
- False negatives pose a different level of risk to both the patient and the CV service line. Patients that should have been sent to the cath lab are now discharged and risk becoming acute care patients. Not only is this more expensive for the service line, but the risk to the patient significantly higher. Damage to the hospital's reputation is also a factor.

Analysis often shows that false negatives happen far more frequently than do false positives—however, both problems are costly to the CV service line and must be minimized.

Using analytics, we can see which stress test providers are ending up with high rates of false negatives and which ones are showing up with more false positives. Real-time performance feedback allows providers to check patterns and adjust protocols to improve accuracy.

2

DRIVING DOWN 30-DAY READMISSION RATES

Under value-based reimbursement programs such as bundled payment models, 30-day readmissions are extremely costly because the hospital will have to provide all care to the readmitted patient—essentially for free.



Medicare penalized 2,573 hospitals for excessive readmission rates in fiscal year 2018. The four top reasons for excessive readmission rates were: chronic lung disease, coronary artery bypass graft surgery, heart attack and, heart failure.

According to Kaiser Health News analysis, CMS will hold \$564 million in payments to some 2,597

hospitals—an average of \$217,174 in costs due to excessive readmissions.

Active tracking of readmissions must include granular, automated analysis of the patterns in readmissions that fall out of range clinically and financially—allowing administrators and clinicians to spot and attack sources of care variation.

3 SWITCHING FROM FEMORAL TO RADIAL ACCESS

Femoral access patients have longer hospital lengths of stay, higher risk of SSI and readmission rates, and in general cost the hospital more money than radial access patients. A study by Amin et al⁸, showed that when radial access and same-day discharge (SDD) strategies were used, they were \$3,689 less costly than when femoral access was employed. The study concluded that programs that performed 1,000 percutaneous coronary intervention (PCI) procedures per year adopting the SDD protocols with radial access in 30 percent of their procedures could save an average of \$1 million per year.

Despite the data that shows costs and risks are higher, and despite clearly seeing that patients find femoral access to be more uncomfortable and even painful compared to radial, some 60 percent⁹ of PCIs continue



to be femoral access procedures—often due simply to physician habit and proficiency.

HealthView Analytics studies show that CV programs could save an average of \$50,000 per provider through this data-enabled change in physician preference.

4 LOWERING SURGICAL SITE INFECTIONS

Studies show that about 2 percent of surgeries result in SSI, and that 60 percent of these could have been avoided. Service lines can endeavor to cut their SSI rates to eight per 1000 surgeries rather than 20. At an average cost of \$25,000 per SSI, this translates into \$300,000 in savings per 1,000 surgeries.

Only by tracking SSIs by procedure and provider can service line administrators identify patterns and target areas to work on. In addition, clinicians with higher than average SSIs can be observed to see if there is something in their methods—for example, a variation from best practices—that may be driving these numbers up.

8 Amin AP, Patterson M, House JA, Giersiefen H, Spertus JA, Baklanov DV, et al. Costs associated with access site and same-day discharge among Medicare beneficiaries undergoing percutaneous coronary intervention: an evaluation of the current percutaneous coronary intervention care pathways in the United States. *JACC Cardiovasc Interv.* 2017 Feb 27; 10(4): 342-351.

9 <https://www.cathlabdigest.com/article/Cath-Lab-Profitability>

5

CONTROLLING OVERTIME

By using point of care analytic tools to track case start and end times, hospitals can identify inefficiencies that drive higher procedure costs. Late start times could be attributed to a few habitually tardy physicians, poor scheduling, case mix, staff or some other systemic problem. Analysis of data must include granular clinical data indicating not just the type of case, but complications and other characteristics leading to variation in case duration for ostensibly similar cases. Only then is it possible to determine what steps should be taken in order to treat patients and utilize resources more efficiently.

For example two major variances that CV service lines must track are the call-to-arrival time (time from when the patient was scheduled to when the physician actually started the procedure) and the patient-out-to-clean time, which tracks the time it takes for the lab or room to be ready for the next patient.

Once it is determined which providers fall below normal versus their peers, on a risk-adjusted basis, it becomes



possible to provide a near real-time feedback loop in the clinical workflow to inform physicians when weekly case averages fall outside the expected norm, the first step in improving behavior patterns. Often, timely information-feedback alone is all that's required to prevent delays due simply to physician late arrival.

6

TRACKING AND OPTIMIZING CONTRAST USAGE

Providers make choices based on what they believe to be best for their patients. In the absence of data to show otherwise, or an awareness of financial impacts of particular choices, it's often possible for providers to make choices that drive up costs while not measurably improving the outcome for the patient.

An example of a major misuse is the overemployment of kidney-safe contrast, which costs five to seven times more, on patients who showed no signs pre-procedure of elevated creatinine levels in their blood.

Analytics enable service line managers to see which providers are using kidney-safe contrast when it isn't warranted. This awareness can drive \$100,000 to \$200,000 in annual savings for service lines that are overutilizing the more expensive contrast.



7

PROMOTING SAME-DAY DISCHARGE

Many heart programs miss a huge opportunity to safely and effectively reduce costs of percutaneous coronary intervention (PCI) patients. A recent JAMA Cardiology study¹⁰ found that while same-day discharge resulted in an average of \$5,100 cost savings per PCI procedure, there was no higher risk of death, bleeding, AKI or AML at 30, 90, or 365 days among same-day discharge patients when compared to non-same-day discharge patients.

Though same-day discharge was shown to be a safe and effective cost-containment strategy, researchers found that the rate of same-day discharge only increased from 1 percent to 10 percent among the 700,000 PCI patients observed from 2005–2015. In addition, there

is significant variation in hospital practices surrounding same-day discharge. Some hospitals discharged their patients the same day about 40 percent of the time, while other hospitals never did. Despite these differences, the study determined that it was “just as safe to go home at the hospitals who were discharging half their patients the same day versus those hospitals who were keeping patients overnight.”

Of course, discharge decisions are case-specific. Achieving best practice often entails up-to-date risk-adjusted performance data for care team education and motivation, combined with disciplined patient care efficiency.

8

TRACKING CV SURGERY VENT TIME

A study from the Annals of Thoracic Surgery sought to reduce the duration of mechanical ventilation and length of stay in a cardiothoracic intensive care unit (ICU), as “delayed extubation increases the risk of ventilator-acquired pneumonia, prolongs the use of sedative medication, delays rehabilitation and increases costs.”¹¹

Though early extubation results in shorter ICU stays and lower costs, the opportunity to perform early extubation is frequently missed—fewer than 12 percent of cardiac surgery patients are extubated within six hours. Researchers hypothesized that establishing standard protocol would create a more efficient extubation process. The study concluded that the implementation of an extubation protocol was safe and associated with a significant reduction in the duration of mechanical ventilation and ICU length of stay after cardiac surgery, which would reduce costs while providing quality care.

A similar effort was spearheaded by Dr. Paul Levy at NEA Baptist Memorial Hospital in Arkansas. In 2015, only 9 percent of patients were extubated within eight hours of their surgery, and 65 percent of their patients



had a two-day ICU length of stay. After implementing a standardized approach to cardiac anaesthesia and a protocol-driven extubation process, the hospital was able to save at least \$650 a case while improving quality of care. In 12 months, 62 percent of their patients were extubated within eight hours, and 78 percent of patients had a one-day length of stay.

10 <https://www.cathlabdigest.com/article/Missed-Opportunity-Same-Day-Discharge-United-States>

11 [https://www.annalsthoracicsurgery.org/article/S0003-4975\(16\)00255-1/pdf](https://www.annalsthoracicsurgery.org/article/S0003-4975(16)00255-1/pdf)

9

REDUCING WASTE IN BLOOD UTILIZATION

A study by St. Vincent Heart Center in Indianapolis showed that cardiac surgeons tend to overuse blood transfusions and needlessly incur avoidable costs.¹²

Lori Shannon, MBA, RN with St. Vincent Heart Center, who presented the study findings to the ACC in February 2019 said, “We were able to separate it out not only by physician but also by pre-op, intra-op and post-op, and really take a look at where our opportunity was. In this case, just by raising awareness with the surgeons and taking a look at the data and the science and cost... we were able to see our rates go down, and further from there the physicians started taking actions to try to actively reduce blood transfusion rates when appropriate.”

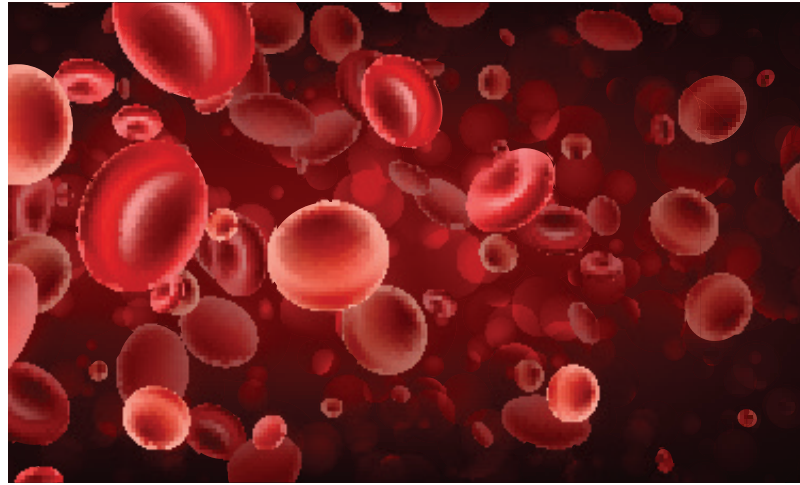
Previous research had shown that 40 percent of blood transfusions are unnecessary. The St. Vincent study supported that by showing a drop in utilization from 37.8 percent to 27.7 percent in just six months.

At a cost of about \$1,100 per unit, the study showed that the average cost of blood transfusion dropped from \$573 to \$361 per case with an estimated savings of \$500,000.

Furthermore, quality measurements did not change:

- Average length of stay dipped from 7.2 days to 7.0 days.
- In-hospital, risk-adjusted mortality remained at 1.2 percent.
- Renal failure increased from 1.0 percent to 1.1 percent.
- Readmissions declined from 5.7 percent to 5.2 percent.

Shannon believes quality might actually improve with fewer transfusions. “We’re hoping that as we continue to monitor this, it will actually be even a bigger impact on



quality because the data shows that there are issues with the more transfusions you give, the more side effects that patients have,” she said.

Again, as with the previous eight performance improvement measures, the clinical behavior of providers is based on a complex decision matrix at the point of care. When timely, trusted analytics data is generated, compared with best practices, and delivered in a non-obtrusive, informative context, caregiver teams are able to adjust performance as appropriate over a remarkably short period of time.

As can be seen from in the graphic below from HealthView Analytics, utilizing blinded data from an actual heart program, the combination of data infrastructure and near real-time analytics creates a powerful performance improvement roadmap for the CV service line manager.

¹² https://www.cardiovascularbusiness.com/topics/coronary-intervention-surgery/initiative-cuts-transfusions-costs-heart-surgery?utm_source=newsletter&utm_medium=cvb_weekend

PROVIDING NEAR REAL-TIME FEEDBACK IN POINT OF CARE SYSTEMS

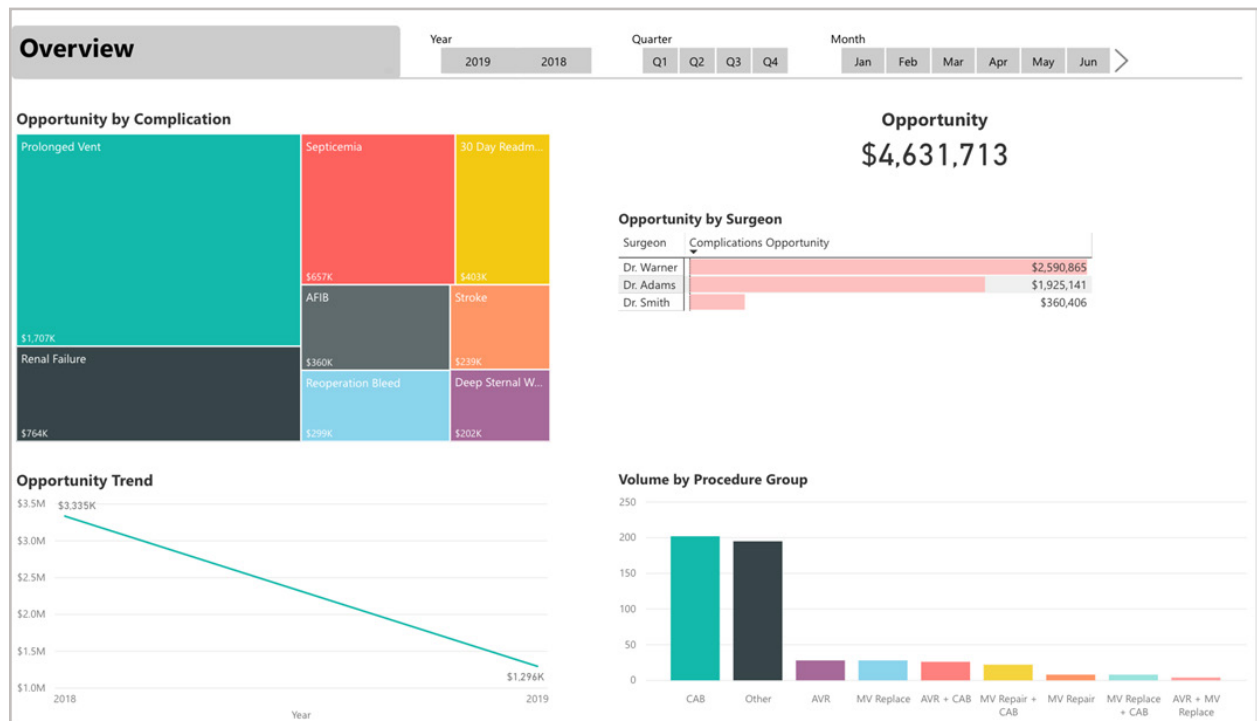
Once the data infrastructure is in place and the performance improvement roadmap is identified, it becomes possible to effect change through provider education, decision support tools and performance feedback embedded in point of care clinical workflows.

One of the most effective ways to dramatically reduce avoidable costs—while improving clinical outcomes and patient satisfaction—is to change the behavior of physicians by embedding the performance data they need in the context of point-of-care workflows.

Though a number of studies have shown that a significant driver of avoidable costs is local care variation from best practices, when providers are presented with data that shows their cost metrics are higher, or quality metrics lower,

Ability to risk adjust cases by comorbidity or other indices enables service line managers to compare “apples with apples.” For instance, if we pull out cardiac patients with similar comorbidities—say diabetes and high blood pressure—and control for similar age groups, then we can run the various numbers (readmission rates, SSIs, and length of hospital stays) for this patient group by providers who saw these patients.

Thus, if two cath providers each perform around 800 cath procedures a year, while treating a similar population of patients, and one has a 3 percent higher readmission rate than the other, we can safely conclude that the higher readmission rate is due to the behavior of that provider rather than circumstances outside of his or her control.



See at a glance whether your physicians are meeting their targets or are in line with national averages, and find the biggest opportunity for cost savings.

than the average for the group, their responses typically tend to be, “No, that can’t be right,” or “Yes, but my patients are sicker,” or “I didn’t know that this device costs more.” In the absence of timely and trusted data to the contrary, expecting a change in caregiver behavior is unreasonable.

Mechanisms for timely observed-versus-expected performance feedback are critical in all walks of life. For many historical reasons, the practice of medicine often lacks these mechanisms.



ABOUT LUMEDX

LUMEDX, an Intelrad company, is dedicated to improving the quality of clinical medicine by reducing costly complications and operational inefficiencies at the point of care.

Founded in 1990, we deliver comprehensive, integrated cardiovascular data intelligence and imaging solutions to more than 650 leading heart and vascular programs worldwide—including 70 percent of the U.S. News & World Report's Top Hospitals list. Our analytics-driven cardiovascular information services (CVIS) draws on seamless connectivity to enterprise systems (EHR/HIS) and provides intelligence-embedded workflows for every modality in the service line: Cath, ECG, EP, Echo, Nuclear, Vascular, Surgery, CT/MR, Pediatrics and more.

In a partnership with Microsoft, the company offers HealthView Analytics, using the Azure Data Factory

infrastructure to integrate clinical and financial data in cardiovascular, orthopedics, neurosciences and maternal/fetal medicine.

Through clinical Performance Programs designed for these high-price service lines, HealthView Analytics provides a mix of technology and knowledge services designed to target avoidable clinical care variation that results in increased costs. The HealthView platform embeds real-time risk assessment and observed-vs-expected performance feedback in the EHR (Epic, Cerner, etc.) and workflow tools such as PACS.

LUMEDX is a leading vendor of population health registry software from the American College of Cardiology (ACC), the Society of Thoracic Surgeons (STS), and multiple state and national organizations.

