

Performance improvements driven by data insights

In today's value-based care environment, visibility across the continuum is required to identify performance gaps and to create actionable insights that drive improved outcomes. Yet creating a clear, concise and sustainable clinical strategy that connects financial, operational and quality data is enough to make anyone see double.

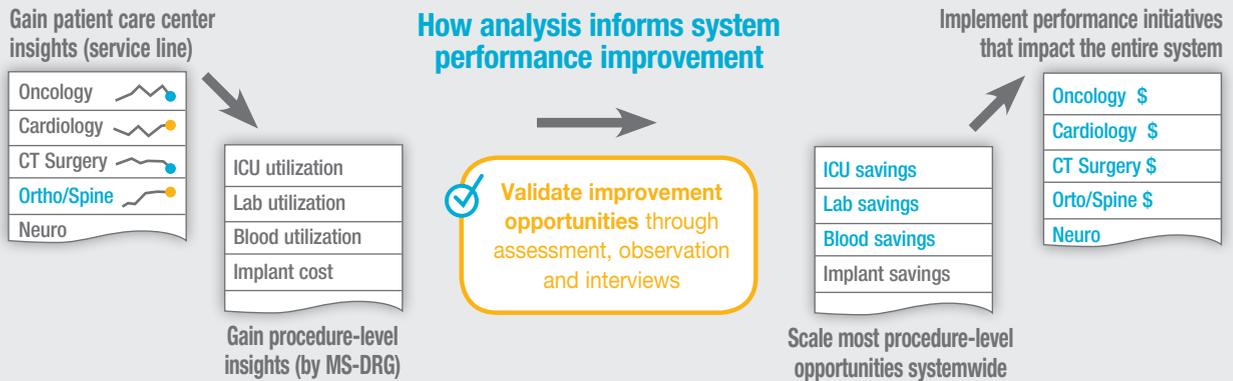
provide insight into why and what to do to get the right outcomes. It's when you connect procedure, supply and clinical data that the focus becomes clear.

Vizient partnered with Remarkable Medical Center, a large academic medical center that manages two million patient visits a year, to improve care and patient access across the system, and to drive market share growth. Using an integrated approach, Vizient identified \$36 million in enterprisewide savings through cost and quality improvement initiatives.

Data is often cited as the key to clarity. But, data is just the beginning of the improvement journey. It can only tell you what's happening, but it can't

Targeting the best opportunities for performance and growth

Using analytics-driven insights, Vizient determined that drilling down to the procedure level revealed the most compelling performance opportunity. Data indicated that the orthopedics service line, one of Remarkable Medical Center's top patient care centers and a high-growth area, presented the greatest opportunity for return.



As the market transitions from volume to value, conducting this analysis will help strategically target the areas with the most opportunity to achieve future growth and maximize performance.

Remarkable's orthopedic and spine service line suggested three performance areas to address:

1. Service line market performance

Performance lags within orthopedics and spine service lines, as compared to its competitors, but the data rules out length of stay and readmissions as the drivers. Direct costs are the clear issue due to high variation in the use of different implants and other related ancillary services.

Orthopedics and spine quality and accountability trends

| Measure | Trend (4Q15-1Q18) | Current (2Q17-1Q17) | Foot and ankle | Hip | Cervical spine | Upper extremity | Dorsal, lumbar, sacral spine | Knee | Spinal surgery - other | Amputations |
|-------------------|---------------------------|---------------------|----------------|------|----------------|-----------------|------------------------------|------|------------------------|-------------|
| | | | | | | | | | | |
| Direct cost index | 75th- median- 25th- | index 1.20 | 1.25 | 1.37 | 1.41 | 1.34 | 1.08 | 1.26 | 0.98 | 1 |
| Mortality index | | index 1.06 | 0 | 1.54 | 1.48 | 0 | 1.71 | 0 | 0 | 0 |
| 30-day readmit % | | readmit 6.50% | 10.2% | 5.3% | 2.4% | 1.8% | 6.9% | 3.4% | 10.5% | 13.7% |
| LOS index | | index 0.82 | 0.97 | 0.87 | 0.97 | 1 | 0.74 | 0.82 | 0.75 | 0.85 |

From the perspective of cost, Vizient evaluated the procedures with the most direct cost variance compared to Remarkable's risk-adjusted expected cost and identified opportunities to significantly increase market share growth.

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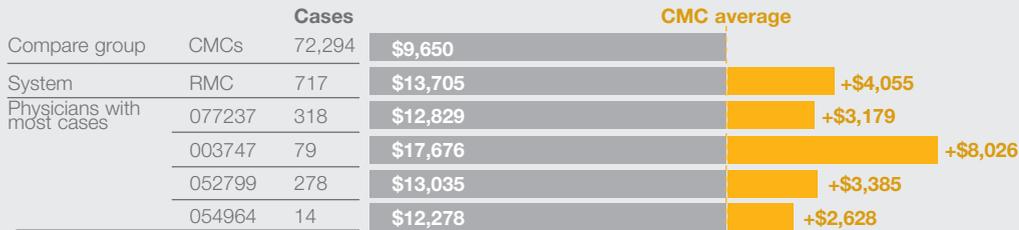


2. Procedure and physician-level data

A deeper look at the physician-level data determined that surgeons with the highest orthopedic caseload also had a higher cost per case than the industry average. For instance, in the graph below, all high-case volume physicians have an average cost per case higher than the CMC average as it relates to hip and knee replacements without major complications. The direct cost variance is \$2.65 million. Vizient dug deeper into opportunities to reduce unnecessary variation and analyzed market intelligence data to determine additional areas for improvement including reducing ICU cases.

Hip and knee replacements without major complications (MS-DRG 470) | Average cost per case

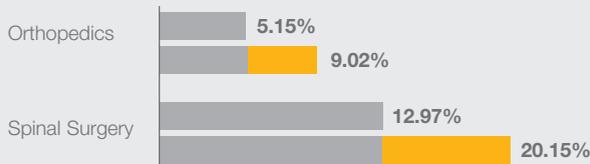
Major hip and knee joint replacement or reattachment of lower extremity without mcc



Data indicates that Remarkable overutilizes its ICU compared to peer institutions and suggests this is not attributed to the high acuity of cases. In addition, higher readmissions to the ICU contribute to higher utilization in orthopedics, a challenge requiring further clinical and operational analysis which would include: examining data analysis vs. benchmarks, understanding what's driving readmissions to the ICU and examining connections between low overall length of stay and high ICU readmissions.

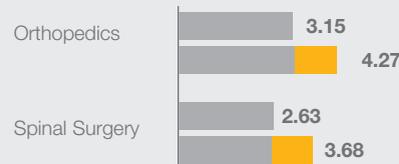
Percent of cases going to the ICU

• Comprehensive CMCs • RMC



Mean days in the ICU

• Comprehensive CMCs • RMC

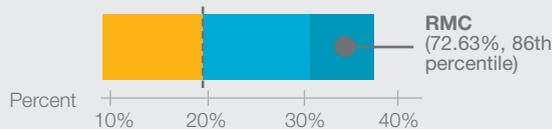


3. Improvement modeling

Remarkable could capture more orthopedics volume, but may not be able to accommodate with existing capacity. They are capturing a low percentage of new orthopedic patients compared to their peers. As such, providers are seeing a high number of patients per hour because established patient visits take less time. Vizient, in partnership with Sg2, a Vizient company that provides healthcare intelligence, provided analysis around ambulatory cost- and site-of-care optimization and physician performance management. With most health systems now deriving a majority of their enterprise revenue from ambulatory care, analytics that span the care continuum and connect performance systemwide are key to achieving meaningful and sustainable improvements.

As it relates to inpatient, equivalent occupancy percent in the orthopedic inpatient unit is higher than 75% of Remarkable's peers. Continued growth in orthopedic market volume will increase the stress on this unit. Further analysis is necessary to determine opportunities including evaluating conversion data for consistent themes and observing patient and work flow to determine root causes.

New patients seen within 10 days of scheduling an appointment



Median days from scheduling and appointment for new patients



Achieving performance improvement across the enterprise

Vizient developed a plan that targeted new orthopedics patients across the market and used the cost and quality improvements as a platform to help drive significant market share growth. Using the breadth and depth of our data, plus our advisory expertise, Vizient determined a 3%-to-5% improvement in targeted utilization, and uncovered 25%–33% net margin increase through labor, clinical documentation and clinical operation improvements. The formula for performance improvement is clear: connect strategic market insights with cost and quality implications, and operationalize at the enterprise and service-line level.

About Vizient, Inc.

Vizient, Inc., the largest member-driven health care performance improvement company in the country, provides innovative data-driven solutions, expertise and collaborative opportunities that lead to improved patient outcomes and lower costs. Vizient's diverse membership base includes academic medical centers, pediatric facilities, community hospitals, integrated health delivery networks and non-acute health care providers and represents approximately \$100 billion in annual purchasing volume. The Vizient brand identity represents the integration of VHA Inc., University HealthSystem Consortium and Novation, which combined in 2015, as well as MedAssets' Spend and Clinical Resource Management (SCM) segment, including Sg2, which was acquired in 2016. In 2018, Vizient again received a World's Most Ethical Company designation from the Ethisphere Institute. Vizient's headquarters are in Irving, Texas, with locations in Chicago and other cities across the United States. Please visit www.vizientinc.com for more information.

