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St. Charles Health System and Carilion Clinic Drive Osteobiologic Supply Savings

Osteobiologics are biological materials used to support bone healing, fusion, and regeneration in procedures such as spinal fusions and joint replacements. It's one of the most complex and costly supply categories in orthopedic and neurosurgical care. Unlike standard supplies, these products vary enormously in form, price, and clinical rationale, with 17 or more distinct products often used across 82 different combinations in a single institution.

For health systems managing thin operating margins, osteobiologic spend represents a significant, addressable opportunity. In one health system analysis, biologics accounted for 38% of total spinal fusion supply spend, approximately $8,000 per case, illustrating the potential scale of this cost category. Yet it's also one of the most difficult to act on, because of physician preference, inconsistent clinical protocols, and the complexity of defining comparable patient cohorts for benchmarking. Without the right data and analytical support, many organizations struggle to understand the magnitude of the problem and drive real change.

Both St. Charles Health System and Carilion Clinic identified opportunities to address osteobiologic spend within their organizations and leveraged Strata's Continuous Improvement (CI) solution and Advisory Services expertise to support their efforts with data, analytics, and insights.

Cost Reduction Through Targeted, Data-Driven Support

Strata's CI Advisory Services team partners with healthcare organizations to uncover specific, actionable cost reduction opportunities backed by detailed encounter and charge-level data. Rather than delivering broad recommendations, the team provides targeted analysis across clinical domains including supplies and pharmacy optimization, physician-level variation, cost-of-care benchmarking, and clinical protocol review.

For osteobiologic initiatives, the CI team leverages the StrataJazz® Continuous Improvement solution to:

- Identify supply utilization variation at the service line, physician, and product level
- Benchmark cost-per-case across internal and external peer organizations
- Quantify the financial impact of high-cost product combinations versus alternatives
- Develop targeted action plans with supporting data that resonates with clinical, operational, and finance leaders
- Track savings realization and monitor for new variation as product landscapes shift

St. Charles Health System and Carilion Clinic demonstrate how organizations can leverage these capabilities to support their own cost reduction initiatives around osteobiologic spend and other use cases.

38%

Spinal fusion supply spend that's tied to biologics (˜$8K per case)

$340K

Realized savings at St. Charles in 12 months

$2.36M

Saved at Carilion Clinic in 12 months

Turning Utilization and Denials Data Into Formulary Action at St. Charles Health System

St. Charles Health System (SCHS), based in Bend, Oregon, identified a growing pattern of payer denials tied to allograft products containing mesenchymal stem cells (MSCs). Its revenue cycle department flagged the trend: eight payers were classifying MSC-based products as "investigational" and refusing reimbursement. The losses were adding up: $340,000 in potential losses related to unreimbursed MSC-based product use, plus $300,000 in excess spend compared to clinically comparable alternatives.

How CI Advisory Services Supported the Initiative

In response to the growing denials issue, the health system decided to stop using one particular MSC-based product entirely, with initial positive results: improved reimbursement and lowered cost per case. The team engaged Strata's CI Advisory team to better track and quantify financial improvement on their biologic spend.

In the first year of tracking, biologic cost per case dropped $1,300, yielding $340,000 in realized savings. However, over time this savings was offset by adoption of even more costly biologics. Through conversations with surgeons, the team determined that this was happening because of the removal ofthe original, MSC-based product.

Finally, in 2024, the system decided to reintroduce the original product but with a required pre-authorization process. This policy has had the intended benefits of stemming use of more costly products, while not introducing denials or reimbursement risk. Since that time, costlier product use has dropped from 33% to 11% of cases, while reimbursement has remained strong, with average reimbursement 27% higher in 2025 than when this journey started in 2021. The initiative demonstrates how structured oversight can preserve both clinical access and financial performance.

Carilion Clinic Addresses Physician-Level Cost Variation to Save $2.36M

Carilion Clinic, a regional health system based in Roanoke, Virginia, identified significant physician-level variation in spinal fusion supply cost per case, driven primarily by one neurosurgeon's use of a premium allograft product. Using the StrataJazz CI solution, Carilion's team analyzed the variation, evaluated clinically comparable alternatives, and identified an opportunity to transition to a substantially lower-cost product. Strata's CI Advisory Services team provided additional analytical support and expertise as Carilion advanced the initiative.

The Initiative and Results

Carilion engaged the physician around the identified variation and ultimately transitioned to a lower-cost alternative. The result was $2.36 million in annual savings.

A Repeatable Framework

The Carilion initiative illustrates the power of combining granular physician-level variation data with analytical expertise and a culture that's open to change. By identifying a single outlier surgeon, quantifying the gap, and presenting a data-supported alternative, Carilion was able to achieve savings that would have been difficult, if not impossible, to surface through standard reporting alone.

To learn more about Strata's Continuous Improvement and other advisory teams, visit https://www.stratadecision.com/advisoryservices.

Metric	Pre-Initiative	Post-Initiative
Avg. Bone Graft Cost per Case	$12,600	$2,500
Total Cost Savings (12 months)	—	$2.36M

Strata tools leveraged:

- Continuous Improvement
- Decision Support
- Advisory Services

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