



REGIONAL ANESTHESIA AND MULTIMODAL
PAIN MANAGEMENT
IMPROVES OUTCOMES, REDUCES COSTS
AND BOOSTS PATIENT SATISFACTION

devoted physicians.
collaborative partners.
metrics-driven quality.



REGIONAL ANESTHESIA AND MULTIMODAL PAIN MANAGEMENT IMPROVES OUTCOMES, REDUCES COSTS AND BOOSTS PATIENT SATISFACTION

May 2013

Today's healthcare landscape, with its focus on accountability, cost containment and performance-driven reimbursement, has transformed the way physicians and hospitals alike are approaching patient care. The old "silo" model of episodic, anecdotal and independent care has given way to increased collaboration across the healthcare spectrum, encompassing primary care physicians, surgeons, anesthesiologists, physical therapists, nurses, pharmacists and hospital administration alike.

Regional anesthesia, a technique for providing anesthesia to a select nerve or group of nerves either for perioperative anesthesia/analgesia or as an adjunct for post-operative pain control, exemplifies this collaborative approach and is resulting in reduced lengths of stay, decreased costs, fewer perioperative complications, better pain control and improved patient satisfaction, especially in rapidly growing services like orthopaedic surgery.

The Evolution of Regional Nerve Blocks

Thanks to the aging baby boomer population, the demand for joint replacement surgeries continues to rise. In fact, the Center for Disease Control and Prevention reports that orthopaedic surgeries currently account for a significant portion of the 48 million inpatient surgeries performed annually in the United States. And the American Academy of Orthopaedic Surgeons predicts total hip replacement procedures will continue to rise as much as 50 percent per year, and total knee replacements will increase 300 percent per year through 2030.

Traditionally, major orthopaedic surgery has been linked to a complex array of perioperative morbidities, including:

- Pain
- Longer hospitalizations due to older patients
- Increased risk for deep vein thrombosis (DVT), pressure ulcers, pneumonia (related to decreased mobility and narcotics) and hospital-acquired infections
- Narcotic-related complications, including postoperative nausea/vomiting, constipation, post-operative cognitive dysfunction/delirium, urinary retention, itching and drowsiness

Because of these complications, leading orthopaedic surgeons and anesthesiologists began working together to establish advanced pain management protocols that centered on the use of regional anesthesia, also known as regional nerve blocks, as well as the addition of continuous block catheters to achieve maximized post-operative pain control. These small, portable, balloon-type pumps deliver local anesthetic directly to a patient's surgical site over the course of several days.

What started with single-injection nerve blocks for outpatient orthopaedic surgery has evolved into comprehensive, multimodal analgesic regional nerve block programs.

Historical Evolution of Regional Anesthesia

1980's

Transition from intramuscular (IM) narcotic analgesia to patient-controlled analgesia (PCA) pumps

1990's

Addition of perioperative epidural analgesia + PCA narcotics

2000's

Single injection regional anesthesia + PCA narcotics + non-narcotic adjuvants.

State
of the
Art

Multimodal regional anesthesia protocols including: neuraxial operative anesthetics (spinal/epidural), non-narcotic adjuvants, and sustained pain control with continuous regional nerve block catheters or depot long acting anesthetics.

Regional Anesthesia Revolutionizes Patient Care

The clinical benefits of regional nerve blocks have been closely studied and clearly documented¹:

- Shorter hospital stays^{2,3,4} and as a result, increased throughput
- Reduced PACU^{5,6} stays
 - The number #1 and #2 reasons for an extended PACU stay are pain and post-operative nausea/vomiting.
- Significantly lower pain scores and better HCAPHS scores
- Reduced post-op cognitive dysfunction/delirium
 - Elderly patients experience up to a 58% decrease in dysfunction/delirium with regional anesthesia compared to use of narcotics.

Patients also experience fewer complications, including DVT, surgical site infections, catheter related urinary tract infections, pneumonia, pressure ulcers, constipation/ileus, nausea/vomiting and postoperative respiratory depression.

In addition, one of the biggest game changers for orthopaedic surgery is the ability to start earlier rehabilitation. This is resulting in significantly improved surgical outcomes, including increased range of motion, gait and balance. In a study of total knee arthroplasty (TKA) patients, regional nerve blocks resulted in⁷:

- Initiation of therapy within 24 hrs of surgery (vs. 48 and 72 hours for the control group)
- Shorter hospital stays
- Fewer inpatient rehab sessions overall
- Less pain
- Greater range of motion in flexion and extension
- Improved strength in quads and hamstrings
- Higher scores on assessments of gait and balance

The Economic Benefits

Inpatient Care Savings

Beyond the clinical benefits, regional anesthesia programs positively impact the bottom line. Two of the most common surgical procedures performed in the U.S., total knee and hip arthroplasty, account for the single greatest Medicare procedural expenditure. A landmark study from the Mayo Clinic demonstrated the implementation of a total joint regional anesthesia program **significantly reduced estimated mean direct hospital costs by an average of \$1,999 per case when compared with controls:**⁸

- Increased savings in ASA 3/4 patients
- A significant reduction in hospital-based (Medicare Part A costs) accounted for the majority of the total cost savings.

Cost savings with regional anesthesia are typically achieved through better patient outcomes and fewer interventions, and the resulting lower overall medical supply costs as well as a significant reduction in hospital length of stay. These savings are found in a number of ways:

- 1.2 day length of stay (LOS) reduction (average hospital's cost per day for a surgical patient = \$1,6579)
- Lower opioid usage and as a result, lower opioid-related adverse effects
- Fewer medical interventions, resulting in lower medical supply costs (urinary catheters, NG tubes, fluids, medications, lab draws)
- Reduced PACU stays

⁸Duncan, CM, Hall Long, K, Warner, DO, Hebl, JR. "The Economic Implications of a Multimodal Analgesic Regimen for Patients Undergoing Major Orthopedic Surgery - A Comparative Study of Direct Costs." Regional Anesthesia and Pain Medicine. July 2009.

Outpatient Care Savings

Cost Comparison of General vs. Regional Anesthesia for Orthopaedic Outpatient Cases¹³

	General Anesthesia		Regional Anesthesia/ Nerve Block	
	Admission Rate	Associated Cost	Admission Rate	Associated Cost
PACU Admissions	100%	\$1,260,000	18%	\$226,800
Unplanned Hospital Admissions	17%	\$1,960,350	4%	\$46,200
TOTAL COST		\$1,456,350		\$273,000

SAVINGS with Regional Anesthesia = \$1.2 million

Chart represents an annual caseload of 3,000. Based on median hospital cost of \$3,500 per patient. Regional anesthesia patients received no volatile anesthetics.

Additional Benefits: Achieving Market Leadership

Not only is patient satisfaction critical to healthcare reform initiatives and reimbursement, it is a true differentiator and can lead to significant competitive advantage in the local marketplace. And one of the key benefits of regional anesthesia programs -- pain control -- plays one of the most powerful roles in achieving strong patient satisfaction scores.

The Centers for Medicare and Medicaid Services' (CMS) Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey has emerged as the gold standard for measuring patient satisfaction and asks patients specific questions related to the quality of their pain management during their hospital stay. Questions include:

- During this hospital stay, how often was your pain well controlled?
- During this hospital stay, how often did the hospital staff do everything they could to help you with your pain?
- Would you recommend this hospital to your friends and family?

Healthcare systems throughout the country are finding that regional anesthesia protocols positively impact their HCAHPS scores^{10,11,12}. In fact, according to Healthgrades, a leading online resource for information about physicians and hospitals, hospitals with the top 15 percent of HCAHPS scores had 26 percent more patients reporting pain well controlled than the bottom 15 percent.

In addition to improved post-surgical pain management and patient satisfaction, regional anesthesia also increases the number of surgeries that can be performed due to improved throughput and increased capacity as well as facilitating inpatient cases to outpatient.

Creating Value

It has been said that the problem hospitals face today is not so much one of costs but one of value. And value encompasses outcomes as well as costs.⁹ Regional anesthesia programs and the improved patient outcomes, satisfaction and cost savings they bring add value and present hospitals with an opportunity to stay ahead of the curve and position themselves as true market leaders in the new healthcare economy.



About JLR Medical Group, Inc.

Founded in Orlando, Florida, in 1988 by Joseph L. Riley, MD, JLR Medical Group is a physician-owned, perioperative services company, providing anesthesia services and pain management throughout Central Florida. Its growing clinical team of 75 anesthesiologists and 120 nurse anesthetists perform over 100,000 cases per year. The company offers a complete, streamlined medical and management solution to achieve an optimally performing operating room.

Working in close partnership with orthopaedic clients like nationally renowned Jewett Orthopaedic, JLR has pioneered advanced breakthrough anesthesia techniques for orthopaedic surgery. Board-certified physicians have also collaborated with hospital leadership and staff to create a comprehensive, perioperative, regional analgesia program that is resulting in:

- Faster recovery
- Significantly reduced side effects
- Reduced use of narcotics and pain medications
- Better physical therapy rehabilitation
- Better surgical outcomes
- Enhanced patient safety
- Improved patient satisfaction
- Reduced hospital costs

This has become a key quality initiative with JLR's partner hospitals.

About U.S. Anesthesia Partners

U.S. Anesthesia Partners is a single-specialty physician services organization that offers practice management to anesthesiologists. It was formed by JLR Medical Group and other leading anesthesia practices to create a platform with the capital resources and expertise to invest in their practice support infrastructure and position them for continued success and growth within their markets. Key elements of USAP's business model are its single-specialty focus and its ability to offer anesthesiologists equity ownership in USAP. USAP and its affiliates have more than 1,200 anesthesia providers serving three major metropolitan markets. USAP is sponsored by Welsh, Carson, Anderson & Stowe, an investment firm with significant experience investing in and building leading healthcare companies. Please visit www.usap.com to learn more.

REFERENCES

- ¹Jankowski CJ, Trenerry MR, Cook DJ, Buenvenida SL, Stevens SR, Schroeder DR, Warner DO. "Cognitive and Functional Predictors and Sequelae of Postoperative Elirium in Elderly Patients Undergoing Elective Joint Arthroplasty." *Anesthesia and Analgesia*. 2011 May;112(5):1186-93. doi: 10.1213/ANE.0b013e318211501b. Epub 2011 Mar 17.
- ²Hunt, KJ et al. "Continuous Peripheral Nerve Blockade as Postoperative Analgesia for Open Treatment of Calcaneal Fractures." *Journal of Orthopaedic Trauma*. 2010
- ³Gomez-Cardero P & Rodriguez-Merchan EC. "Postoperative analgesia in TKA: Ropivacaine Continuous Intraarticular Infusion." *Clinical Orthopaedics and Related Research*. 2010
- ⁴Boughey, JC et al. "Improved Postoperative Pain Control using Thoracic Paravertebral Block for Breast Operations." *Breast Journal*. 2009.
- ⁵Akcaboy, EY, Akcaboy ZN, Gogus. "Comparison of Paravertebral Block versus Fast-track General Anesthesia ...in Outpatient Inguinal Herniorrhaphy." *Journal of Anesthesia*. 2010.
- ⁶Yauger YJ et al. "Patient Outcomes Comparing CRNA-administered Peripheral Nerve Blocks and General Anesthetics..." *American Association of Nurse Anesthetists Journal*. 2010.
- ⁷Labraca NS, Castro-Sánchez AM, Matarán-Peñarocha GA, Arroyo-Morales M, Sánchez-Joya Mdel M, Moreno-Lorenzo C. "Benefits of Starting Rehabilitation within 24 Hours of Primary Total Knee Arthroplasty: Randomized Clinical Trial. *Clinical Rehabilitation*. 2011 Jun;25(6):557-66. doi: 10.1177/0269215510393759. Epub 2011 Mar 7. ⁸Duncan, CM, Hall Long, K, Warner, DO, Hebl, JR. "The Economic Implications of a Multimodal Analgesic Regimen for Patients Undergoing Major Orthopedic Surgery - A Comparative Study of Direct Costs." *Regional Anesthesia and Pain Medicine*. July 2009.
- ⁹Whelan, C. "The New Economic of Healthcare: Evaluating Medical Technologies Based on Actual Value as a Growth Strategy for Healthcare Providers." *Frost & Sullivan Economics of Healthcare*. 2010.
- ¹⁰Jansen, TK et al. "Will the Addition of a Sciatic Nerve Block to a Femoral Nerve Block Provide Better Pain Control...?" *American Association of Nurse Anesthetists Journal*. 2009.
- ¹¹Marino et al. "Continuous Lumbar Plexus Block for Postoperative Pain Control After Total Hip Arthroplasty..." *The Journal of Bone and Joint Surgery*. 2009.
- ¹²Gallay, SH et al. "Development of a Regional Model of Care for Ambulatory Total Shoulder Arthroplasty..." *Clinical Orthopaedics and Related Research*. 2008.
- ¹³Williams BA, Motolenich P, Kentor ML. "Hospital Facilities and Resource Management: Economic Impact of a High-Volume Regional Anesthesia Program for Outpatients." *International Anesthesiology Clinics*. 2005 Summer; 43(3):43-51.



291 Southhall Lane, Suite 201
Maitland, Florida 32751
407.667.0444

jlrmadicalgroup.com



450 East Las Olas Blvd., Suite 850
Ft. Lauderdale, FL 33301
954.614.8819

usap.com