AVANOS

ON-Q* PAIN RELIEF SYSTEM

VALUE COMPARISON OF ON-Q* PAIN RELIEF SYSTEM TO OTHER ANALGESIC OPTIONS

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Evaluating the economics of healthcare decisions has never been more important. The Affordable Care Act, including provisions for value-based purchasing (VBP) – which gives providers incentive payments tied to the quality of care they provide Medicare beneficiaries – can influence the economic success or failure of any hospital servicing the Medicare population.[1] Therefore, a comprehensive value analysis must accompany any decision that alters the cost of care delivery. Avanos recognizes that product purchases must be offset by savings realized through strategic analysis of the purchase's impact on VBP measures.

When making a product purchase for your hospital, it is useful to closely examine which VBP measures, specifically, may be impacted by it. For example, the Avanos ON-Q* Pain Relief System – which is employed to provide localized analgesia after surgery – could impact the following:

- HCAHPS ratings for "how often was your pain well controlled," and the rating for overall satisfaction with their hospital experience.[2]
- Efficiency or Medicare spend per patient impacted by reductions in length of stay (LOS). ON-Q* reduces LOS by an average of 1.1 days, with the average national cost of one day in the hospital being $2,289 in non-profits, $1,791 in for-profits, and $1,878 in government hospitals.[3]

The average cost of an opioid-related adverse drug event in hospitals is $4,707 per patient[1]

- Patient outcomes related to complications. When pain is well-controlled, patients cough and deep breath, ambulate, and perform exercises better than those with poor pain control. When these functions are compromised, complications may result such as pneumonia, deep vein thrombosis, pulmonary embolus, and generalized weakness leading to falls.[4] Additionally, patients that consume more opioids are more likely to experience side effects such as sedation, nausea and vomiting, and constipation. Use of continuous local anesthetic infusions have been shown to reduce overall opioid consumption by >50%.[5]

Traditional postoperative analgesia has been provided by opioids as the "mainstay of pain management" for many years. While opioids may provide some analgesia, recent studies indicate that opioid analgesia is less than optimal.[6] Since overall opioid consumption is limited by side effects, pain control may not be optimized. A study published in the *Journal of Pain & Palliative Care Pharmacotherapy* found that the average cost of an opioid-related adverse drug event in hospitals is $4,707 per patient.[7] Additionally, opioid exposure, even for short periods due to a surgery or injury, can lead to long-term addiction.[8] The risks have been grossly underestimated with recent evidence that 1 in 4 persons prescribed opioids led to longer-term prescriptions.[9] Since opioid-related deaths have surpassed motor vehicle accidents as the number-one cause of accidental death in the U.S.,[10] global efforts to curb opioid exposure and addiction must be implemented.

Other options for postoperative pain management include epidural infusions, other adjuvant analgesics, or local anesthetic infusions. While epidural infusions may

provide good analgesia, the decision to use this site of delivery should be evaluated for risks versus benefits. The many contra-indications for epidurals, along with their expansive side effect profile, render them less than optimal for many patients.[11] Other adjuvant analgesics – such as nonsteroidal anti-inflammatory drugs (NSAIDs), anticonvulsants, antidepressants, skeletal muscle relaxants, or benzodiazepines – may be beneficial in low doses, but potential side effects as the doses are escalated may force them to be eliminated from the analgesic regimen.[12] Local anesthetic infusions via wound/sub-fascial catheters or nerve blocks, provides a safer analgesic option as the "mainstay of pain management" with lower associated side effects.[11] Supplemental adjuvants in low doses can then be added as part of a multimodal regimen, to maximize analgesia.

Continuous regional analgesia has been shown to reduce costs associated with hospital LOS, complication rates, and opioid-related side effects.[5, 13, 14, 16, 17]

THE ON-Q* DIFFERENCE

The pump is simple to use with no alarms that awaken patients and create nursing staff burden. More than 170 clinical studies have shown that patients with ON-Q* experience shorter hospital stays and reduced associated costs[13, 14, 15, 16] and higher patient satisfaction than narcotics alone.[16, 17, 18] Professional training on catheter placement to achieve ideal patient outcomes is provided in the form of cadaver with ultrasound labs, peer-to-peer onsite experiences, live model ultrasound and placement labs, educational didactic training sessions or webinars, nursing unit in-services, and nursing continuing education offerings. Our team members are on-site for support to establish new regional block programs, assist with multidisciplinary meetings, provide implementation checklists, and/or monitor quality measurements before and after program implementation. The local territory managers are specifically trained in acute pain, and do not act as distributors representing multiple product lines. They are focused on facility success with improving acute pain and related patient outcomes.

ADDITIONAL RESOURCES OFFERED BY AVANOS INCLUDE:

- A 24-hour patient/customer hotline, answered by registered nurses that are trained in triage related to our products
- A computerized data collection app that patients and customers can use to report and monitor quality outcome data
- Additional data support for collection, monitoring, and reporting the significance of outcome data, before and after program implementation
- On-staff clinicians to offer expert assistance, experience with process implementation, and on-site collaboration with your multidisciplinary team
- Marketing packages customized for the facility

ECONOMIC COMPARISON OF ON-Q* TO OTHER ANALGESIC OPTIONS

Opioid comparison	
While opioid analgesics are a frugal purchase, outcomes associated with the use of opioids warrant close economic scrutiny. Patients that receive continuous regional blocks as their primary postoperative analgesia compared to opioids, can expect the following cost-saving outcomes:	• Reduction in post-anesthesia care unit (PACU) time by 25-50%, or PACU bypass[19] • Reduction in postoperative nausea and vomiting and opioid side effects.[6] • Early ambulation and physical therapy contributing to a reduction in complication rates[20] • Reduction in LOS [21] • Improvement in patient satisfaction scores impacting VBP reimbursements.[5] • Reduction in opioid-associated monitoring and treatment of side effects by nursing staff.[22]
Epidural comparison	
Side effects related to epidurals can be risky, such as epidural hematoma, epidural abscess, or spinal nerve damage, not to mention contraindications eliminating epidural as an analgesic option for many patients.[11] Additional costs incurred related to epidural use that could be reduced with continuous regional blocks include:	• Costs associated with the use of electronic pumps (see specifics below) • Nursing staff acuity – intensive vital sign monitoring; may include the use of additional monitoring[23] • Electronic monitor costs such as pulse oximetry, carbon dioxide monitors, and/or telemetry monitors • Advanced care training and/or advanced care unit placement for patient • Costs to manage side effects – nausea and vomiting, itching, sedation[24] • LOS – option to send patient home sooner with regional block.[14]
ON-Q* versus electronic pump comparison	
Electronic pumps may have additional costs that should be considered as part of an overall value analysis. The following list includes additional cost considerations for the use of an electronic pump:	• Capital expenditure for pump • Pump tubing • Pump batteries • Pump electricity • IV pole to mount pump • Cleaning of pump • Cleaning of IV pole • Biomedical equipment technician (BMET) pump maintenance • Pharmacy acuity for repetitive bag/vial filling; if using PCA, handling of opioids by pharmacist only • Nursing acuity for programming, changing medication bags/vials, re-programming, answering pump alarms, bolusing, pump documentation • Liability associated with safety – pump programming errors, nursing alarm fatigue, tubing connection mishaps[25] • Quiet hospital environment impacted by alarming pumps[26]
ON-Q* versus other portable pump comparison	
Refer to "The ON-Q* Difference" for the many advantages Avanos provides for ON-Q* customers.	**Sample studies** of economic impact of regional blocks: • Average savings of direct hospital costs in total joint replacements was $1,999 per patient with use of continuous regional block.[27] • Average cost of opioid-related adverse drug event was $4,707. Side effects from opioids cost an average of $1,000/patient.[28] • PACU time was reduced by 146 minutes with continuous interscalene block, compared to general anesthesia for rotator cuff repair.[29] Calculation of average cost/ minute in PACU = $10 x 146 = $1,460 in savings. Additional evidence of 39 minutes average time saved with regional blocks compared to traditional anesthesia = $390/case savings.[30] • LOS was reduced by 1.1 days at an average national cost of $2,518/patient for non-profit hospital with use of continuous regional block for hip fracture.[31]

SUMMARY

The use of continuous regional analgesia has been shown to reduce costs associated with hospital LOS, complication rates, and opioid-related side effects.[5, 13, 14, 16, 17] It has also been shown to boost reimbursement for VBP by improving results in "Efficiency, Patient Satisfaction, and Clinical Outcomes," an HCAHPS category. Avanos provides comprehensive clinician training programs and ongoing customer support. ON-Q* as the preferred choice of delivery method may save valuable staff time by reducing staff resources needed to service electronic pumps such as PCA32, and allows patients to be discharged home with a safe, user-friendly device.

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There are inherent risks in all medical devices. Please refer to the product labeling for **Indications**, **Cautions**, **Warnings** and **Contraindications**. Failure to follow the product labeling could directly impact patient safety. Physician is responsible for prescribing and administering medications per instructions provided by the drug manufacturer. Refer to **www.avanospainmanagement.com** for additional product safety Technical Bulletins.

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