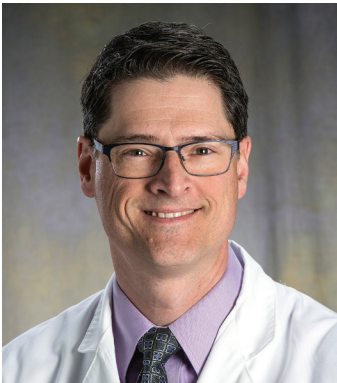


MULTIMODAL ANALGESIA: ACUTE PAIN RELIEF FOR THE WHOLE PATIENT

By Roy Soto, MD



Roy Soto, MD

In the last few decades, rising concerns about the misuse and abuse of opioids have brought pain and pain management to the forefront as a public health concern. In response, the National Institutes of Health and the Institute of Medicine released in 2015 the first-ever National Pain Strategy, calling on

healthcare providers to customize pain therapy by taking into account the differences that affect the onset of pain and how each patient responds to interventions.¹

That's at odds with current practices in perioperative pain management, which often rely on an opioid-only approach to handle the entire spectrum of pain both during and after surgery.

Despite its widespread use, opioid-only pain management is not doing a good job of managing either surgical pain or its associated costs. Further, the complications and side effects of opioids are well documented and prevalent: Respiratory depression—a life threatening breathing complication—nausea and vomiting, hypotension, slowing heart rhythm, and inhibition of bowel function.² Life-threatening respiratory depression is among opioids' most severe side effects, and occurs in as many as 1 out of every 10,000 patients.³

Multimodal Analgesia (MMA) is customized pain therapy that reduces the need for opioids for acute pain

A balanced MMA approach leads to better pain management, lower costs and fewer hospital readmissions

The support for MMA is widespread and based on public health concerns about increasing opioid abuse and adverse reactions

However, many providers rely solely on opioids for acute pain care

MMA also faces significant access barriers: Hospital formularies, costs decisions and clinical care time constraints

Thus, the U.S. is falling behind in the successful treatment of perioperative acute pain

WHAT IS MULTIMODAL ANALGESIA?

MMA is a strategy for managing a patient's acute pain after surgery through the use of two or more pain-controlling medications.

A comprehensive alternative to opioid-only therapy exists: Multimodal analgesia (MMA). The approach favors the strategic, customized combination of multiple analgesics—both opioid and non-opioid—to provide for safer, more personalized pain treatment.

THE COST OF OPIOID-ONLY PAIN MANAGEMENT IS STEEP

A 2012 report of the International Anesthesia Research Society found that a single opioid-related adverse event increased costs per patient by \$1,000.⁴ Another study covering the years between 2009 and 2010 found that opioid-related adverse events cause a 55 percent longer hospital stay, increase total cost of care by 47 percent and increase the risk of readmission in the first 30 days after surgery by 36 percent. Perhaps most consequential was the risk of mortality, which was 3.4 times higher than the risk for patients who did not experience an opioid-related adverse event.⁵

Opioid-only treatment also compounds potential complications for already at-risk patients. Factors such as obesity, smoking, sleep apnea and the use of antihistamines can affect dosages and outcomes, including severe respiratory depression and the associated mortality risk. Thus, opioid monotherapy can increase long-term costs like hospital readmissions—a cost often opaque in the discussion of pain management because it occurs after the initial intervention.

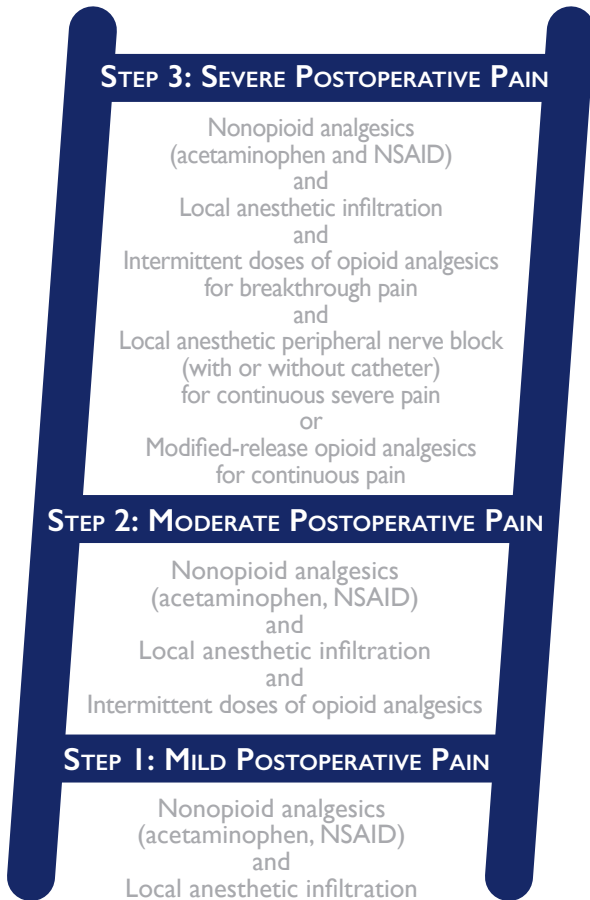
MMA OFFERS A BETTER WAY TO TREAT PAIN

MMA is a multi-tiered strategy that takes into account all the circumstances and risk factors that affect a patient's pain during and after surgery. It primarily begins with the administration of non-opioids like acetaminophen, laddering up to other medications—sometimes opioids—as determined by physicians and other healthcare professionals in consultation with the patient. Analgesics may include medications like non-steroidal anti-inflammatory drugs, acetaminophen, COX-2 inhibitors, gabapentinoids, NMDA receptor antagonists, opioids, epidurals and peripheral nerve blocks.⁶

Though drugs like IV acetaminophen are considered less potent than opioids, they can provide significant effect. Studies have shown that when patients receive a dose of IV acetaminophen before or during surgery, they need strong opioids less after their surgery. Additionally, patients who received IV acetaminophen had far fewer bouts of nausea, vomiting and other negative side effects.⁷

Given MMA's persuasive outcomes, many medical practitioners—as well as the National Institutes of Health and the American Society of Anesthesiologists—support the approach as an effective method to better manage pain. Yet the U.S. has made little progress in adopting this balanced alternative. Nationwide studies show no reduction in improved relief for acute pain over the last 20 years,⁸ despite the recommendation from the American Society of Anesthesiologists to use multimodal techniques whenever possible.⁹

A LADDERED APPROACH TO ANALGESIA



Modified from: Crews, J.C. (2002).
Multimodal pain management strategies for office-based and ambulatory procedures.

MMA also has positive implications for a downward trend of opioid use in the critical period following surgery. In the U.S., patients in their first day after surgery receive opioids 98 percent of the time, while Europeans receive opioids only about 70 percent of the time.

MMA SAVES MONEY BY DECREASING LONG-TERM COSTS

This balanced pain approach puts the physician-patient relationship back in the forefront of the clinical care paradigm. Though the time required for pharmaceutical customization may seem costly in the short run, MMA has been found to decrease the length of hospital stays by about a day—and that’s a day that costs on average \$2,000 nationwide.¹¹ That’s because MMA helps minimize adverse events by customizing treatment to anticipate problems based on a patient’s history.

MMA can also reduce overall healthcare costs by minimizing the opportunity for opioid-related complications, or adverse events. Opioids are used almost exclusively in surgical settings for acute pain. Yet opioid-averse events are a common and widely acknowledged problem that occurs in about 12 percent of cases.¹² At worst, opioids can cause respiratory depression and carry a risk of death. Opioid-related adverse effects also include minor events such as nausea, vomiting, constipation, falls, hypotension—all of which can significantly drive up hospital costs because of the need for inpatient clinical care and additional medications.

EUROPE PRESENTS AN EXAMPLE OF MMA EFFECTIVENESS

Europe’s example demonstrates the difference that can be made in patient outcomes using MMA. There, standard surgical analgesic care begins with non-opioids around the clock for 72 hours. Opioids are then employed for rescue purposes only. In the European scenario, the first line of treatment for pain doesn’t skip all the way to the most potent. It employs good, low-risk analgesics first. The results in patients’ reported pain is persuasive—Europeans had less pain the day after surgery than those in the U.S.¹⁰

MULTIMODAL ANALGESIA:

- Customizes treatment based on patients’ history
- Decreases length of hospital stays by about a day, saving approximately \$2,000
- Minimizes the chance of opioid-related adverse events

MULTIPLE BARRIERS IMPEDE PROGRESS ON BALANCED PAIN THERAPY

Hospital Formularies Don't Include MMA Modalities

The hospital formulary, a list of drugs approved for use in the hospital setting, presents a significant barrier to healthcare professionals wishing to employ MMA. The volume of opioids ordered during surgery is due in part to their ready availability, inclusion on many hospital formularies and relatively low cost—particularly those available in generic form. In contrast, MMA uses multiple drugs, some of which may be available only in costlier, brand-name versions.

Formulary Decisions Reflect Short-term Costs

In recent years, injectable ibuprofen, acetaminophen and liposomal bupivacaine—a long-acting local anesthetic—have come on the market and offered healthcare professionals more options for analgesia. Studies have shown IV acetaminophen, for example, has no risk of respiratory depression or constipation and is not associated with addiction risks like opioids.¹³ It also has been shown to reduce adverse events following surgery, and patients given IV acetaminophen need less rescue analgesia post-operatively and have higher satisfaction with their pain management.¹⁴ Yet most of these new products—which are branded, not generic—are restricted or excluded from hospital formularies.¹⁵

Opioids are often less expensive upfront and therefore more favored by formularies. Yet opioid-averse events, which happen frequently, increase costly hospital readmissions, prolong hospital stays and drive up clinical cost per patient. These potential costs should be included in any decision on approved formulary analgesics for hospital staff.

Too often, hospital formulary decisions reflect only short-term costs—not long-term value.

Healthcare Providers Must be Included in Formulary Decisions

When decisions are made about the hospital formulary, too often only short-term costs are considered, not long-term value. This may be due in part to the scarcity of experienced clinicians participating in formulary decisions. Healthcare providers should be valued and equal partners—alongside pharmacists and hospital administrators—in determining which medications are available for the surgical procedures they perform. By putting formulary decisions in appropriate clinical context, healthcare providers can help shape formularies that better reflect the needs of the patients, best practices by clinicians, and the long-term economic interests of the hospital.

MMA Requires Additional Training and More Time at the Bedside

The next significant barrier to the use of MMA is the time required to customize care. That means a higher upfront investment in consultation and at the bedside to consider patients' risk factors and educate them about what to expect after surgery.

Training can also be a significant obstacle. Many healthcare providers are accustomed to the opioid monoculture for pain relief and may not yet be versed in MMA practices. With better resources, practitioners can train on how to adjust medication to levels of pain before, during and after procedures, versus prescribing only opioids by rote.

OPENING ACCESS TO BALANCED PAIN MANAGEMENT

In its National Pain Strategy, the NIH calls for a sea of change: The future is pain therapy tailored to the individual and available to all.

To produce that change, policymakers and hospital systems must support access to multimodal analgesia. That may entail investments upfront to achieve cost saving and pain-reducing benefits later. Meanwhile, healthcare professionals need time and training to adopt best practices for pain management.

REFERENCES

1. National Pain Strategy: A Comprehensive Population Health-Level Strategy for Pain. NIH publication, 2015. Available from: <http://iprcc.nih.gov/docs/DraftHHSNationalPainStrategy.pdf>
2. Ramsay, Michael A.E. Acute postoperative pain management. Proc (Bayl Univ Med Cent) 2000 July; 13(3): 244–247. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1317048/>
3. Ashburn MA; Love G; Pace NL. Respiratory-related critical events with intravenous patient-controlled analgesia. Clin J Pain. 1994;10:52–56. Available form: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1317048/>
4. Gan, T.J.; Oderda, G.; Robinson, S. Kidney Injury After Percutaneous And Opioidrelated Adverse Events Increase Length Of Stay And Drive Up Total Cost Of Care In A National Database Of Postsurgical Patients. Final Supplement to Anesthesia & Analgesia presented at the International Anesthesia Research Society. May, 2012. [Internet] Available from: http://www.iars.org/assets/1/7/2012_Abstract_Supplement.pdf [Search for S-366]
5. Kessler, E.R.; Shah, M.; Gruschkus, S.K.; Raju, A. Cost and quality implications of opioid-based postsurgical pain control using administrative claims data from a large health system: opioid-related adverse events and their impact on clinical and economic outcomes. Pharmacotherapy. 2013;33(4):383-91. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/23553809>
6. Crews JC. Multimodal pain management strategies for office-based and ambulatory procedures. JAMA. 2002;288(5):629-632.
7. Pasero, Chris; Stannard, Daphne. The Role of Intravenous Acetaminophen in Acute Pain Management. Pain Manag Nurs. 2012;13(2):107-124. Available from: http://www.medscape.com/viewarticle/764841_4
8. Correll, Darin J.; Vlassakov, Kamen V.; Kissin, Igor. No evidence of real progress in treatment of acute pain, 1993–2012: scientometric analysis. J Pain Res. 2014; 7: 199–210. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3990387/>
9. American Society Of Anesthesiologists Task Force On Acute Pain Management. Practice Guidelines For Acute Pain Management In The Perioperative Setting: An Updated Report By The American Society Of Anesthesiologists Task Force On Acute Pain Management. Anesthesiology. 2012;116(2):248-73. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/22227789>
10. Chapman, C.R.; Stevens, D.A., Lipman, A.G. Quality of postoperative pain management in American versus European institutions. J Pain Palliat Care Pharmacother. 2013 Dec;27(4):350-8. doi: 10.3109/15360288.2013.846955. Epub 2013 Oct 21. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24143928>
11. Becker's Healthcare: Average Cost Per Inpatient Day Across 50 States [Internet]. [Cited 19 May 2015]. Available from: <http://www.beckershospitalreview.com/finance/average-cost-per-inpatient-day-across-50-states.html>
12. Oderda, G.M.; Gan, T.J.; Johnson, B.H.; Robinson, S.B. Effect of opioid-related adverse events on outcomes in selected surgical patients. J Pain Palliat Care Pharmacother. 2013 Mar;27(1):62-70. doi: 10.3109/15360288.2012.751956. Epub 2013 Jan 9. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/23302094>
13. Pasero, Chris; Stannard, Daphne. The Role of Intravenous Acetaminophen in Acute Pain Management. Pain Manag Nurs. 2012;13(2):107-124. Available from: http://www.medscape.com/viewarticle/764841_4
14. IV Acetaminophen Improves Pain Management and Reduces Opioid Requirements in Surgical Patients: A review of the clinical data and case-based presentations. [Internet] Anesthesiology News Special Report, April 2012. Available from: http://www.anesthesiologynews.com/download/sr122_wm.pdf
15. Acute Moderate to Severe Postoperative Pain: How Will U.S. Prescribers and Payers Determine the Success of Emerging Pain Therapies in the Hospital Setting? [Internet] Available from: <https://decisionresourcesgroup.com/report/?id=457>

ABOUT THE AUTHOR AND THE INSTITUTE FOR PATIENT ACCESS

Roy Soto, MD, is a board-certified anesthesiologist practicing in Royal Oak, Michigan.

The Institute for Patient Access is a physician led non-profit 501(c)(3) research organization promoting the benefits of the physician-patient relationship in the provision of quality healthcare. To learn more visit www.AllianceforPatientAccess.org