

## The MOD<sup>®</sup> Oral PCA Smaller Opioid Doses with Better Postoperative Pain Management



The MOD<sup>®</sup> oral Patient Controlled Analgesia (PCA) device enables qualified patients to self-administer their own oral as-needed (prn) pain medication in tab form after each lockout interval in hours between allowed doses. This discussion addresses the status of oral prn pain medication in surgical patients and why the MOD<sup>®</sup> is the evidence-based choice for prn oral pain medication:

- Significantly better pain control compared to the manual delivery of prn oral pain medication.
- The ability to dispense smaller doses of opioids as a PCA device while providing better pain management
- Pain data and reassessment pain data entry by the patient – dosing is not “by the numbers”.
- Proven safety compared to intravenous opioids or the IV PCA with NEVER a reported need to rescue from respiratory depression.
- Less pain interference with recovery compared to the manual delivery of oral prn pain medication.
- Pain and medication administration data in one place for easy tracking of pain management success
- Patient self-weaning their times of prn administration during the hospital stay to inform a realistic discharge prescription

Pain management physicians and national pain organizations continue to recognize the need for as-needed opioid medication as part of multimodal pain management following inpatient complex surgical procedures (Apfelbaum, et al., 2012; Scott, et al., 2017; Tighe, et al., 2015). Multimodal pain management deploys a combination of drugs (opioids and nonopioids) and anesthesia techniques to minimize the use of opioids for pain management. This approach is now the standard of care in surgical patients.

Opioid use has been explored after surgery discharge because of the outpatient opioid epidemic and recommendations for opioid management in the outpatient arena. Recent publications have concluded that the range of patients continuing to use opioids up to one year after surgical discharge can range from less than 1% up to 7% with variability according to the time in months after the surgical procedure, the psychological profile of the patients, and the possible overprescribing of opioids at the time of discharge (Brummett, et al., 2017; Goesling, et al., 2016; Hill, McMahon, Stucke & Barth, 2017; Schoenfeld, et al., 2016; Sun, Darnall, Baker & Mackey 2016). However, none of this information can reflect on the true reasons for continuing opioid use such as other developed morbidities during the examined time interval, the possible development of chronic pain or other pain sources following surgery, and the skill of outpatient pain management in these patients.

This data alone should not justify the removal of opioids as part of multimodal pain management in surgical patients; it should instead encourage a more judicious use of these medications. Inadequate perioperative pain management can only lead to more patients with the induction of chronic pain because of this approach (Reddi & Curran, 2014).

No healthcare professional would consent to any inpatient surgical procedure that did not deploy all the necessary medications and techniques available to adequately manage their pain, and neither should any layperson because of the swing of the pendulum proposing to manage postoperative pain without the availability of opioids if needed.

An important question here is: What is the best approach to minimize opioid use while providing optimal pain control in surgical patients? The Medication on Demand oral PCA device, called the MOD<sup>®</sup>, provides eligible patients a safe, secure way to obtain their own low dose of an oral opioid when needed after each lockout period in hours. A recent prospective randomized trial of MOD<sup>®</sup> use with 5 mg oxycodone available PRN every two hours was compared to the nurse manual delivery of oxycodone 5-10 mg every four hours according to the numeric pain score after total hip arthroplasty (Pizzi, Bates, Vulakovich & Chelly, 2016). On post-op day one, MOD<sup>®</sup> patients had lower pain scores (mean value of 4.7) as compared to the control group (mean pain score of 6.0). The p value was <0.0001 validating a significant difference in pain scores while the MOD<sup>®</sup> patients were taking lower doses of oxycodone 5 mg as compared to the control group at a mean value of 8 mg.

The MOD<sup>®</sup> is a safe way to deliver prn oral pain medication. The continued risks of intravenous opioids and, in particular, IV PCA can be avoided with the use of oral as-needed (prn) oral opioids. A 2016 consensus publication from three national pain organizations has called for the use of oral opioids in all surgical patients that can take oral pain medication as opposed to intravenous pain medications as a strong recommendation (Chou, et al., 2016). The reason given for this recommendation is that oral opioids are just as effective as intravenous opioids for pain management. Oral opioids are also safer than intravenous opioids.

Reports of respiratory depression and deaths from IV PCA use continue to occur according to the Anesthesia Patient Safety Foundation and a Sentinel Events report from The Joint Commission (Nadeau 2017; The Joint Commission Sentinel Event, 2012). The Avancen White Paper entitled “The MOD Experience after 1000 Patients” ([www.avancen.com](http://www.avancen.com)), reports no events of rescue for respiratory depression in MOD<sup>®</sup> patients in four different facilities. No incident of respiratory depression has ever been reported now up to 3,000 patients having used MOD<sup>®</sup> devices in multiple facilities.

The delivery of oral opioids prn according to the numeric pain score has received considerable criticism by the American Society of Pain Management Nursing (Pasero, Quinlan-Colwell, Rae Broglio & Drew, 2016). Many hospitals have adopted this method because of the apprehension over The Joint Commission reservations regarding range orders for the selection of opioid prn dosing. The primary problem with “dosing by the numbers” is the patient experience of getting penalized with too little pain medication early on in the postoperative stay when they report their true numeric pain score that may be low but rising at the time of the pain score question. Once patients are penalized and undertreated in this fashion, they continue to report high pain scores during the remainder of their stay to ensure that they get what they may feel is adequate dosing of oral pain medication. This approach may often provide more medication than needed and

does not inform the staff of the patient's true oral pain medication needs at the time of discharge.

MOD<sup>®</sup> patients have also reported significantly less interference with pain with the recovery parameters mood, appetite, sleep, general activity, and physical therapy as compared to control patients after total knee arthroplasty (Lambert & Cata, 2014). As patients use the MOD<sup>®</sup> during their hospital stay, they often unknowingly begin to wean themselves off their opioid pain medication as pain improves during their stay. They know that when the MOD<sup>®</sup> green light comes on, the lockout interval has passed and the medication will remain available until the next dose is requested and removed. This assurance provides some security so that the time between doses lengthens. This timing data is always available on the computer application MOD<sup>®</sup> screen or "dashboard" for each patient, and it can be used to inform what dose and time interval can be prescribed at the time of discharge. This approach avoids the excess number of opioid pain pills being prescribed at discharge which has been cited as a possible contributor to the outpatient opioid epidemic (Hill, McMahon, Stucke & Barth, 2017).

In today's hospitals the evidence-based approach for the use of oral prn opioids as part of multimodality pain management in surgical patients supports the use of the MOD<sup>®</sup> oral PCA device for safety, better pain management using smaller doses of opioids, and better recovery outcomes as compared to the manual delivery of prn oral pain medication.

## References

1. Apfelbaum, J.L., Ashburn, M.A., Connis, R.T., Gan, T.J., Nickinovich, D.G., Caplan, R.A. ... Rice, L.J. (2012). 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*, 116(2), 248-265.
2. Brummett, C.M., Waljee, J.F., Goesling, J., Moser, S., Lin, P. Englesbe, M.J. ... Nallamotheu, B.K. (2017). New persistent opioid use after minor and major surgical procedures in US adults. *JAMA Surgery* April 12, Epub ahead of print.
3. Chou, R., Gordon, D.B., de Leon-Casasola, O.A., Rosenberg, J.M., Bickler, S., Brennan, T. ... Wu, C.L. (2016). Management of postoperative pain: a clinical practice guideline from the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists' Committee on Regional Anesthesia, Executive Committee, and Administrative Council. *Journal of Pain*, 17(2), 131-157.
4. Goesling, J., Moser, S.E., Zaidi, B, Hassett, A.L., Hilliard, P.L, Hallstrom, B. ... Brummett, C.M. (2016). Trends and predictors of opioid use after total knee and total hip arthroplasty, *Pain*, 157(6), 1259-1265.
5. Hill, M.V., McMahon, M.L., Stucke, R.S. & Barth, R.J. (2017). Wide variation and excessive dosage of opioid prescriptions for common general surgical procedures. *Ann Surg.* 265(4), 709-714.
6. Lambert, T.L. & Cata, D.M. (2014). The traditional method of oral as-needed pain medication delivery compared to an oral patient-controlled analgesia device following total knee arthroplasty. *Orthopaedic Nursing* 33(4), 217-223.

7. Nadeau, K. (2017) Perils of managing pain start in pre-op. Healthcare Purchasing News, May 2017, 20-24.
8. Pasero, C., Quinlan-Colwell, A., Rae, D., Broglio, K. & Drew, D. (2016). Prescribing and administering opioid doses based solely on pain intensity: A position statement by the American Society for Pain Management Nursing. Pain Mgt Nursing 17(3), 170-180.
9. Pizzi, L.J., Bates, M., Vulakovich, K. & Chelly, J.E. (2016). A prospective randomized trial of an oral patient-controlled analgesia device versus usual care for the administration of as needed (PRN) oral pain medications following total hip arthroplasty. Poster presentation from the University of Pittsburgh Medical Center (UPMC) Shadyside Hospital at Nursing Research Day, November 2016. Manuscript in preparation for publication.
10. Reddi, D. & Curran, N. (2014). Chronic pain after surgery: pathophysiology, risk factors and prevention. Postgrad. Med J. 90(1062), 222-227.
11. Schoenfeld, A., Chaudhary, M.A., Scully, R., Chowdhury, R., Sharma, M., Herrera-Escobar, J.P. ... Haider, A.H. (2016). Opiate pain killers prescribed after severe injury do not lead to long-term use. Presentation at the American College of Surgeons meeting, 2016.
12. Scott, M.J., McEvoy, M. D., Gordon, D.B. Grant, S.A., Thacker J.K.M., Wu, C.L. ... Miller, T.E. (2017). American Society for Enhanced Recovery (ASER) and Perioperative Quality Initiative (POQI) joint consensus statement on optimal analgesia within an enhanced recovery pathway for colorectal surgery: Part 2 from PACU to the Transition Home, Perioperative Medicine 6(7), 1-10.
13. Sun, E.C., Darnall, B.D., Baker, L.C. & Mackey, S. (2016). Incidence of and risk factors for chronic opioid use among opioid-naïve patients in the postoperative period. JAMA Internal Medicine, 176(9), 1286-1293.
14. The Joint Commission Sentinel Event Alert #49 (2012). Safe use of opioids in hospitals, retrieved from <http://www.jointcommission.org>.
15. Tighe, P, Buckenmaier III, C.C., Boezaart, A.P., Carr, D.B., Clark, L.L., Herring, A.A. ... Reisfield, G.M. (2015). Acute pain medicine in the United States; a status report. Pain Med. 16(9), 1806-226.

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