Improving acute pain care with multimodal analgesia

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Discussion topics

Section 1 | Opioid monotherapy and the state of acute pain management

Section 2 | Multimodal analgesia for balanced acute pain management

Section 3 | Pain Stewardship Program™ overview

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Section 1

Opioid monotherapy and the state of acute pain management

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Acute pain care remains suboptimal

Opioids are often used as the foundational agents in acute pain management protocols[1-3]

- In a 2014 research database of 2,853,632 inpatients treated with IV analgesia for operative and nonoperative pain**, less than 27% received multimodal analgesia**, while 73% received IV opioid monotherapy[2]

According to patient surveys, postoperative pain continues to be undermanaged[4-6]

- Of patients reporting postoperative pain in multiple surveys published from 1995 to 2014[4-6]:

44% to 51%
reported
moderate pain

8% to 22%
reported
extreme pain

References: 1. Thorson D et al; Institute for Clinical Systems Improvement (ICSI). https://www.icsi.org/_asset/dyp5wm/Opioids.pdf. Published January 2014. Accessed December 12, 2016. **2.** Data on file. Mallinckrodt Hospital Products, Inc. **3.** Singla NK et al. *Am J Ther*. 2015;22(1):2-10. **4.** Warfield CA et al. *Anesthesiology.* 1995;83(5):1090-1094. **5.** Apfelbaum JL et al. *Anesth Analg.* 2003;97(2):534-540. **6.** Gan TJ et al. *Curr Med Res Opin.* 2014;30(1):149-160.

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Opioids and adverse drug events

Opioids may be associated with adverse drug events, including[1-5]:

Common	Clinically significant	Life threatening
Constipation	Bowel obstruction	Airway obstruction
Dizziness	Confusion	Respiratory arrest
Nausea	Dysphoria	Respiratory depression
Pruritus	Ileus	
Sedation	Vomiting	
Urinary retention		

References: 1. Kehlet H. *Anesthesiology*. 2005;102(6):1083-1085. **2.** Wheeler M et al. *J Pain.* 2002;3(3):159-180. **3.** Sinatra RS. Opioids and opioid receptors. In: Sinatra RS et al, eds. *The Essence of Analgesia and Analgesics*. Cambridge, United Kingdom: Cambridge University Press; 2011:chap 13. **4.** Kumar L et al. *Gastroenterol Res Pract*. 2014:141737. doi:10.1155/2014/141737. **5.** Remy C et al. *Br J Anaesth.* 2005;94(4):505-513.

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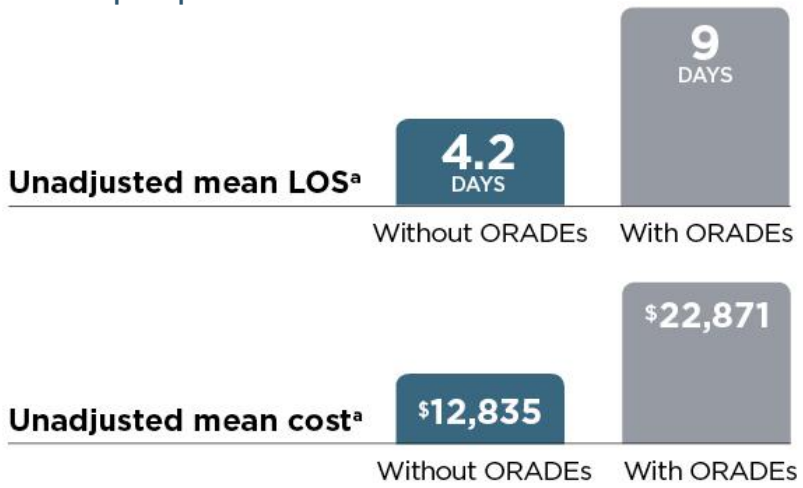
Impact of ORADEs on length of stay and cost

ORADEs can impact length of stay

- In a retrospective medical record review of 402 patients who received opioids after orthopedic surgery, a significant relationship was observed between incidence of opioid-related adverse drug events (ORADEs) and increased length of stay (LOS)[1]

ORADEs can also significantly increase overall cost

- In a second retrospective analysis of a large, national hospital database, ORADEs significantly increased not only LOS, but also overall cost of certain surgical procedures, including open colectomy, laparoscopic colectomy, laparoscopic cholecystectomy, total abdominal hysterectomy, and hip replacement[2]



[a] *P*<0.001.

References: 1. Pizzi LT et al. *Pharmacotherapy.* 2012;32(6):502-514. **2.** Oderda GM et al. *J Pain Palliat Care Pharmacother.* 2013;27(1):62-70.

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Opioid monotherapy and the state of acute pain management

Addressing the challenges

The Joint Commission supports the need for the judicious and safe prescribing and administration of opioids[1]

- More than 70 million patients per year receive opioids in a hospital or clinic following surgery.[2,3] Today, numerous state and federal programs, as well as hospital associations, support efforts to decrease opioid abuse and dependence[4-8]

The Joint Commission recommendations

- In 2012, The Joint Commission recommended the combination of both non-pharmacologic and pharmacologic approaches for effective pain management[1]

Non-pharmacologic therapies:
- Acupuncture
- Ice
- Manipulation or massage
- Music therapy
- Physical therapy

+

Non-opioid pharmacologic therapies:
- Acetaminophen
- Anticonvulsants
- Muscle relaxants
- NSAIDs

=

Goal

References: 1. The Joint Commission. Safe use of opioids in hospitals. *Sentinel Event Alert.* 2012;49:1-5. http://www.jointcommission.org/assets/1/18/SEA_49_opioids_8_2_12_final.pdf. Accessed December 12, 2016. **2.** Adamson RT et al. *Hosp Pharm*. 2011;46(6 suppl 1):S4-S11. **3.** Kessler ER et al. *Pharmacotherapy*. 2013;33(4):383-391. **4.** Franklin G et al. *Am J Public Health*. 2015;105(3):463-469. **5.** Johnson H et al. *MMWR Morb Mortal Wkly Rep*. 2014;63(26):569-574. **6.** Joint Policy Working Group. http://www.mass.gov/eohhs/docs/dph/quality/drugcontrol/best-practices/best-practices-workgroup-report.pdf. Published August 27, 2014. Accessed December 12, 2016. **7.** Arizona Criminal Justice Commission. http://www.azcjc.gov/acjc.web/rx/readmore.aspx. Accessed December 12, 2016. **8.** Massachusetts Health & Hospital Association. http://www.mhalink.org/AM/Template.cfm?Section=MHA_News1&template=/CM/ContentDisplay.cfm&ContentID=48802. Published February 5, 2015. Accessed January 17, 2017.

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Section 2

Multimodal analgesia for balanced acute pain management

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The role of multimodal analgesia

Multimodal analgesia can help optimize pain management with less opioids[1,2]

- Multimodal analgesia (MMA) combines 2 or more analgesic agents or techniques that use different mechanisms to provide better pain relief with less opioids[1,2]

MMA is believed to contribute to:

- ✓ **Reduced doses of opioids[3-6]**
- ✓ **Reduced risk of ORADEs[5-8]**
- ✓ **Shorter length of stay[9]**
- ✓ **Less pain during rest and activity[10,11]**
- ✓ **Improved patient satisfaction[12]**

ORADE, opioid-related adverse drug events.

References: 1. The Joint Commission. *Sentinel Event Alert.* 2012;49:1-5. http://www.jointcommission.org/assets/1/18/SEA_49_opioids_8_2_12_final.pdf. Accessed December 12, 2016. **2.** American Society of Anesthesiologists Task Force on Acute Pain Management. *Anesthesiology*. 2012;116(2):248-273. **3.** Jo CH et al. *Eur J Orthop Surg Traumatol*. 2014;24(3):315-322. **4.** Mathiesen O et al. *Eur Spine J*. 2013;22(9):2089-2096. **5.** Kehlet H et al. *Anesth Analg.* 1993;77(5):1048-1056. **6.** White PF. *Curr Opin Investig Drugs.* 2008;9(1):76-82. **7.** Garimella V et al. *Clin Colon Rectal Surg.* 2013;26(3):191-196. **8.** Mann C et al. *Anesthesiology.* 2000;92(2):433-441. **9.** Michelson JD et al. *Foot Ankle Int.* 2013;34(11):1526-1534. **10.** Fu PL et al. *J Int Med Res.* 2010;38(4):1404-1412. **11.** Sivrikoz N et al. *Ağri*. 2014;26(1):23-28. **12.** Skinner HB. *Am J Orthop.* 2004;33(suppl 5):5-9.

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Multimodal analgesia for balanced acute pain management

Intervening at various points along the pain pathway[1-4]

Perception of pain involves both the peripheral and central nervous systems, and different types of analgesics can intervene at different levels of this signal transduction:

- Cortical level (opioids, α_2-agonists, acetaminophen, NMDA antagonists)
- Spinal cord level (local anesthetics, opioids, α_2-agonists, NMDA antagonists)
- Peripheral level (local anesthetics, NSAIDs, COXIBs)

By combining different analgesics, MMA can optimize efficacy with a lower dose of each respective agent and may also reduce the risk for dose-related adverse events[3]

COXIB, cyclooxygenase-2–specific inhibitor; NMDA, *N*-methyl-D-aspartate.

References: 1. Gottschalk A et al. *Am Fam Physician.* 2001;63(10):1979-1984. **2.** Anderson BJ. *Pediatr Anesth.* 2008;18(10):915-921. **3.** Kehlet H et al. *Anesth Analg.* 1993;77(5):1048-1056. **4.** Joshi GP. *Anesthesiol Clin North America.* 2005;23(1):185-202.

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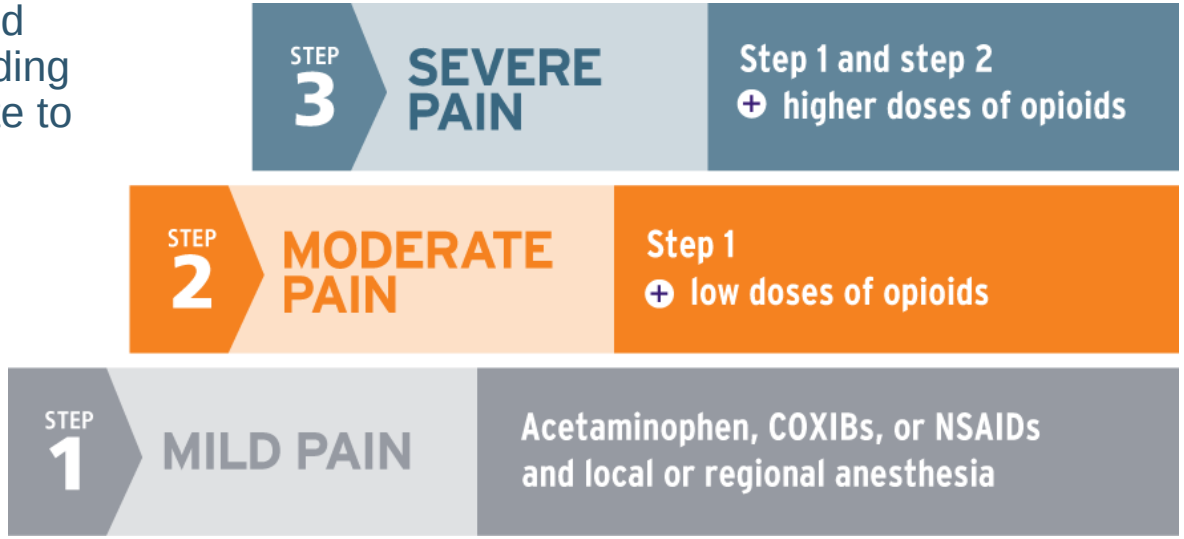
Multimodal analgesia for balanced acute pain management

The foundation of acute pain management

When used in combination with opioids, non-opioid treatments may reduce the dose of opioids required to effectively manage pain[1]

Schedule non-opioid analgesics first, adding opioids for moderate to severe pain[2-4]



COXIB, cyclooxygenase-2–specific inhibitor.

References: 1. The Joint Commission. *Sentinel Event Alert*. 2012;49:1-5. http://www.jointcommission.org/assets/1/18/SEA_49_opioids_8_2_12_final.pdf. Accessed December 12, 2016. **2.** American Society of Anesthesiologists Task Force on Acute Pain Management. *Anesthesiology*. 2012;116(2):248-273. **3.** Crews JC. *JAMA.* 2002;288(5):629-632. **4.** Manworren RCB. *AORN J.* 2015;101(3):308-314.

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Multimodal analgesia for balanced acute pain management

Organizations recommending an MMA approach[1-12]

- Agency for Healthcare Research and Quality
- American Academy of Orthopaedic Surgeons
- American College of Surgeons
- American Geriatrics Society
- American Heart Association
- American Society for Pain Management Nursing
- American Society of Anesthesiologists
- American Society of PeriAnesthesia Nurses
- Enhanced Recovery After Surgery Society
- Society of Critical Care Medicine
- Society of Hospital Medicine
- The Joint Commission

MMA, multimodal analgesia.

References: 1. Wells N et al. Improving the quality of care through pain assessment and management. In: Hughes RG, ed. *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Rockville, MD: Agency for Healthcare Research and Quality; 2008:chap17. **2.** American Academy of Orthopaedic Surgeons Work Group. http://www.aaos.org/Research/guidelines/HipFxGuideline_rev.pdf. Published September 5, 2014. Accessed December 12, 2016. **3.** Mohanty S et al. https://www.facs.org/~/media/files/quality%20programs/geriatric/acs%20nsqip%20geriatric%202016%20guidelines.ashx. Accessed December 12, 2016. **4.** Shah S et al; The American Geriatrics Society. http://www.americangeriatrics.org/gsr/anesthesiology/pain_management.pdf. Accessed December 12, 2016. **5.** Antman EM et al. *Circulation*. 2007;115(12):1634-1642. **6.** Jarzyna D et al. *Pain Manag Nurs*. 2011;12(3):118-145. **7.** American Society of Anesthesiologists Task Force on Acute Pain Management. *Anesthesiology*. 2012;116(2):248-273. **8.** American Society of PeriAnesthesia Nurses. *J Perianesth Nurs*. 2003;18(4):232-236. **9.** Gustafsson UO et al. *World J Surg*. 2013;37:259-284. **10.** Barr J et al. *Crit Care Med*. 2013;41(1):263-306. **11.** Frederickson TW et al, eds. *Reducing Adverse Drug Events Related to Opioids Implementation Guide*. Philadelphia, PA: Society of Hospital Medicine; 2015. **12.** The Joint Commission. *Sentinel Event Alert.* 2012;49:1-5. http://www.jointcommission.org/assets/1/18/SEA_49_opioids_8_2_12_final.pdf. Accessed December 12, 2016.

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Multimodal analgesia for balanced acute pain management

MMA remains underutilized

Although included in these organizations' treatment recommendations,[1-12] MMA has remained underutilized

In a 2014 analysis of inpatient surgical procedures, IV analgesic regimens were multimodal less than 35% of the time[13]:

consisted of
opioid monotherapy

MMA, multimodal analgesia.

References: 1. Wells N et al. Improving the quality of care through pain assessment and management. In: Hughes RG, ed. *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Rockville, MD: Agency for Healthcare Research and Quality; 2008:chap17. **2.** American Academy of Orthopaedic Surgeons Work Group. http://www.aaos.org/Research/guidelines/HipFxGuideline_rev.pdf. Published September 5, 2014. Accessed December 12, 2016. **3.** Mohanty S et al. https://www.facs.org/~/media/files/quality%20programs/geriatric/acs%20nsqip%20geriatric%202016%20guidelines.ashx. Accessed December 12, 2016. **4.** Shah S et al; The American Geriatrics Society. http://www.americangeriatrics.org/gsr/anesthesiology/pain_management.pdf. Accessed December 12, 2016. **5.** Antman EM et al. *Circulation*. 2007;115(12):1634-1642. **6.** Jarzyna D et al. *Pain Manag Nurs*. 2011;12(3):118-145. **7.** American Society of Anesthesiologists Task Force on Acute Pain Management. *Anesthesiology*. 2012;116(2):248-273. **8.** American Society of PeriAnesthesia Nurses. *J Perianesth Nurs*. 2003;18(4):232-236. **9.** Gustafsson UO et al. *World J Surg*. 2013;37:259-284. **10.** Barr J et al. *Crit Care Med*. 2013;41(1):263-306. **11.** Frederickson TW et al, eds. *Reducing Adverse Drug Events Related to Opioids Implementation Guide*. Philadelphia, PA: Society of Hospital Medicine; 2015. **12.** The Joint Commission. *Sentinel Event Alert.* 2012;49:1-5. http://www.jointcommission.org/assets/1/18/SEA_49_opioids_8_2_12_final.pdf. Accessed December 12, 2016. **13.** Data on file. Mallinckrodt Hospital Products, Inc.

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Section 3

Pain Stewardship Program overview

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Acute pain management education is our priority

The mission of the Pain Stewardship Program (PSP) is to educate hospitals on MMA-based acute pain care to support improvements in:

Opioid use	Length of stay	Satisfaction with treatment

PSP provides a variety of educational resources for acute pain management

MMA, multimodal analgesia.

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Educational resources

Developed in collaboration with a multidisciplinary team of expert advisors, these educational resources describe how to:

BUILD
internal consensus and buy-in throughout the institution

IMPLEMENT
recommendations in acute pain care

EDUCATE
patients about what to expect with acute pain

ASSESS
patients' acute pain and evaluate clinical risk factors

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Educational materials and resources (continued)

Acute pain management overview

Provides clinical staff with an overview of acute pain management in the hospital environment, the need for quality improvement in pain care, the role of MMA, and a compilation of published analgesic recommendations

Acute pain management pocket reference

A compact reference guide designed to help clinical staff assess the presence and severity of acute pain and identify treatment-related risk factors

Patient education brochure

Encourages patients to be active participants in managing perioperative acute pain by establishing realistic expectations for acute pain control and helping them understand the role of MMA

Speaker resources

Presentations to provide an overview of the Pain Stewardship Program and to educate hospital stakeholders and decision-makers about the risks of ORADEs and the role of MMA

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MMA, multimodal analgesia; ORADE, opioid-related adverse drug events.

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Society of Hospital Medicine recommendations for implementing an acute pain quality initiative

The following recommendations from the Society of Hospital Medicine provide a basic framework for implementing a quality initiative[1]:

1. Form an interdisciplinary team with shared objectives.
2. Secure institutional stakeholder support to advance the program.
3. Assess existing acute pain management protocols.
4. Review guidelines and best practices for acute pain management.
5. Identify performance metrics and develop a data collection plan.
6. Implement and continually monitor impact of pain management protocols.

Reference: 1. Anderson WG et al, eds. *Improving Pain Management for Hospitalized Medical Patients: A Society of Hospital Medicine Implementation Guide.* http://tools.hospitalmedicine.org/resource_rooms/imp_guides/Pain_Management/pain.html. Accessed June 22, 2016.

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