

**Managing Pain in Postoperative Patients:
What the Hospitalist Needs to Know
(2019-2022)**

REFERENCES

1. Apfelbaum JL, Chen C, Mehta SS, Gan TJ. Postoperative pain experience: results from a national survey suggest postoperative pain continues to be undermanaged. *Anesth Analg.* 2003;97:534-540.
2. Merskey H. Pain terms: a list with definitions and notes on usage. Recommended by the Subcommittee on Taxonomy. *Pain.* 1979;6:249-252.
3. Block BM, Liu SS, Rowlingson AJ, et al. Efficacy of postoperative epidural analgesia a meta-analysis. *JAMA.* 2003;290:2455-2463.
4. Wu CL, Cohen SR, Richman JM, et al. Efficacy of postoperative patient-controlled and continuous infusion epidural analgesia versus intravenous patient-controlled analgesia with opioids: a meta-analysis. *Anesthesiology.* 2005;103:1079-1088.
5. Rodgers A, Walker N, Schug S, et al. Reduction of postoperative mortality and morbidity with epidural or spinal anaesthesia: results from overview of randomised trials. *BMJ.* 2000;321:1-12.
6. Rigg JR, Jamrozik K, Myles PS, et al. Epidural anaesthesia and analgesia and outcome of major surgery: a randomised trial. *Lancet.* 2002;359:1276-1282.
7. Tuman KJ, McCarthy RJ, March RJ, et al. Effects of epidural anesthesia and analgesia on coagulation and outcome after major vascular surgery. *Anesth Analg.* 1991;73:696-704.
8. Sharrock, NE, Haas SB, Hargett MJ, et al. Effects of epidural anesthesia on the incidence of deep-vein thrombosis after total knee arthroplasty. *J Bone Joint Surg.* 1991;73:502-506.
9. Richmann JM, Liu SS, Courpas G, et al. Does continuous peripheral nerve block provide superior pain control to opioids? A meta-analysis. *Anesth Analg.* 2006;102:248-257.
10. Fowler SJ, Symons J, Sabato S, Myles PS. Epidural analgesia compared with peripheral nerve blockade after major knee surgery: a systematic review and meta-analysis of randomized trials. *Br J Anaesth.* 2008;100:154-164.
11. Júnior Ade P, Erdmann TR, Santos TV, et al. Comparison between continuous thoracic epidural and paravertebral blocks for postoperative analgesia in patients undergoing thoracotomy: Systematic review. *Braz J Anesthesiol.* 2013;63:433-442.
12. Walder B, Schafer M, Henzi I, et al. Efficacy and safety of patient-controlled opioid analgesia for acute postoperative pain. A quantitative systematic review. *Acta Anaesthesiol Scand.* 2001;45:795-804.
13. Buggy DJ, Doherty WL, Hart EM, Pallett EJ. Postoperative wound oxygen tension with epidural or intravenous analgesia: a prospective, randomized, single blind clinical trial. *Anesthesiology.* 2002;97:952-958.
14. Akça O, Melischek M, Scheck T, et al. Postoperative pain and subcutaneous oxygen tension. *Lancet.* 1999;354:41-42.
15. Vaurio LE, Sands LP, Wang Y, et al. Postoperative delirium: the importance of pain and pain management. *Anesth Analg.* 2006;102:1267-1273.
16. Macrae WA. Chronic post-surgical pain: 10 years on. *Br J Anaesth.* 2008;101:77-86.

17. Kehlet H, Jensen TS, Woolf CJ. Persistent postsurgical pain: risk factors and prevention. *Lancet*. 2006;367:1618-1625.
18. Macario A, Vasanawala A. Improving quality of anesthesia care: opportunities for the new decade. *Can J Anesth*. 2001;48:6-11.
19. White PF, Kehlet H. Improving postoperative pain management: what are the unresolved issues? *Anesthesiology*. 2010;112:220-225.
20. Carli F, Mayo N, Klubien K, et al. Epidural analgesia enhances functional exercise capacity and health-related quality of life after colonic surgery: results of a randomized trial. *Anesthesiology*. 2002;97:540-549.
21. Wu CL, Rowlingson AJ, Partin AW, et al. Correlation of postoperative pain to quality of recovery in the immediate postoperative period. *Reg Anesth Pain Med*. 2005;30:516-522.
22. Peters ML, Sommer M, Rijke JM, et al. Somatic and psychologic predictors of long-term unfavorable outcome after surgical intervention. *Ann Surg*. 2007;245:487-494.
23. Comprehensive Accreditation Manual for Hospitals (CAMH). *The Official Handbook*. Oak Brook, IL: The Joint Commission Organization; 2017.
24. Mularski RA, White-Chu F, Overbay D, et al. Measuring pain as the 5th vital sign does not improve quality of pain management. *J Gen Intern Med*. 2006;21:607-612.
25. Tang J, Gibson SJ. A psychophysical evaluation of the relationship between trait anxiety, pain perception, and induced state anxiety. *J Pain*. 2005;6:612-69.
26. Sullivan MJL, Rodgers WM, Kirsch I. Catastrophizing, depression and expectancies for pain and emotional distress. *Pain*. 2001;91:147-154.
27. Paice JA, Cohen FL. Validity of a verbally administered numeric rating scale to measure cancer pain intensity. *Cancer Nurs*. 1997;20:88-93.
28. Hicks CL, von Baeyer CL, Spafford P, et al. The Faces Pain Scale - Revised: toward a common metric in pediatric pain measurement. *Pain*. 2001;93:173-183.
29. Melzack R. The McGill Pain Questionnaire: major properties and scoring methods. *Pain*. 1975;1:277-299.
30. Cleland CS, Ryan KM. Pain assessment: global use of the Brief Pain Inventory. *Ann Acad Med Singapore*. 1994;23:129-138.
31. Clark WC, Yang JC, Tsui SL, et al. Unidimensional pain rating scales: a multidimensional affect and pain survey (MAPS) analysis of what they really measure. *Pain*. 2002;98:241-247.
32. Correll DJ. *The Measurement of Pain: Objectifying the Subjective*. In: *Pain Management*, 2nd Edition. Waldman (ed). Philadelphia, PA: Elsevier; 2011:191-201.
33. French SD, Cameron M, Walker BF, et al. Superficial heat or cold for low back pain. *Cochrane Database Syst Rev*. 2006;(1):CD004750.
34. Konrath GA, Lock T, Goitz HT, et al. The use of cold therapy after anterior cruciate ligament reconstruction. A prospective, randomized study and literature review. *Am J Sports Med*. 1996;24:629-633.
35. Saito N, Horiuchi H, Kobayashi S, et al. Continuous local cooling for pain relief following total hip arthroplasty. *J Arthroplasty*. 2004;19:334-347.
36. Patterson DR, Jensen MP. Hypnosis and clinical pain. *Psychol Bull*. 2003;129:495-521.

37. Bjordal JM, Johnson MI, Ljunggreen AE. Transcutaneous electrical nerve stimulation (TENS) can reduce postoperative analgesic consumption. A meta-analysis with assessment of optimal treatment parameters for postoperative pain. *Eur J Pain*. 2003;7:181-188.
38. Sun Y, Gan TJ, Dubose JW, et al. Acupuncture and related techniques for postoperative pain: a systematic review of randomized controlled trials. *Br J Anaesth*. 2008;101:151-160.
39. Romsing J, Moiniche S, Dahl JB. Rectal and parenteral paracetamol, and paracetamol in combination with NSAIDs, for postoperative analgesia. *Br J Anaesth*. 2002;88:215-226.
40. Marret E, Kurdi O, Zufferey P, et al. Effects of nonsteroidal antiinflammatory drugs on patient-controlled analgesia morphine side effects: meta-analysis of randomized controlled trials. *Anesthesiology*. 2005;102:1249-1260.
41. Romsing J, Moiniche S. A systematic review of COX-2 inhibitors compared with traditional NSAIDs, or different COX-2 inhibitors for post-operative pain. *Acta Anaesthesiol Scand*. 2004;48:525-546.
42. Kearney PM, Baigent C, Godwin J, et al. Do selective cyclo-oxygenase-2 inhibitors and traditional non-steroidal anti-inflammatory drugs increase the risk of atherothrombosis? Meta-analysis of randomised trials. *BMJ*. 2006;332:1302-1308.
43. Curtis SP, Ng J, Yu Q, et al. Renal effects of etoricoxib and comparator nonsteroidal anti-inflammatory drugs in controlled clinical trials. *Clin Ther*. 2004;26:70-83.
44. Moore RA, Derry S, McQuay HJ. Cyclo-oxygenase-2 selective inhibitors and nonsteroidal anti-inflammatory drugs: balancing gastrointestinal and cardiovascular risk. *BMC Musculoskelet Disord*. 2007;8:73.
45. Tiippuna EM, Hamunen K, Kontinen VK, et al. Do surgical patients benefit from perioperative gabapentin/pregabalin? A systematic review of efficacy and safety. *Anesth Analg*. 2007;104:1545-1556.
46. Buvanendran A, Kroin JS, Della Valle CJ, et al. Perioperative oral pregabalin reduces chronic pain after total knee arthroplasty: a prospective, randomized, controlled trial. *Anesth Analg*. 2010;110:199-207.
47. Saarto T, Wiffen P. Antidepressants for neuropathic pain. *Cochrane Database Syst Rev*. 2007;(4):CD005454.
48. Hocking G, Visser EJ, Schug SA. Ketamine: does life begin at 40? *Pain: Clinical Updates (IASP)*. 2007;15:1-6.
49. Elia N, Tramer MR. Ketamine and postoperative pain-a quantitative systematic review of randomised trials. *Pain*. 2005;113(1-2):61-70.
50. Zakine J, Samarcq D, Lorne E, et al. Postoperative ketamine administration decreases morphine consumption in major abdominal surgery: a prospective, randomized, double-blind, controlled study. *Anesth Analg*. 2008;106:1856-1861.
51. Visser E, Schug SA. The role of ketamine in pain management. *Biomed Pharmacother*. 2006;60:341-348.
52. Barreveld AM, Correll DJ, Liu X, et al. Ketamine decreases postoperative pain scores in patients taking opioids for chronic pain: results of a prospective, randomized, double-blind study. *Pain Med*. 2013;14:925-934.
53. Webb AR, Skinner BS, Leong S, et al. The addition of a small-dose ketamine infusion to tramadol for postoperative analgesia: a double-blinded, placebocontrolled,

- randomized trial after abdominal surgery. *Anesth Analg.* 2007;104:912-917.
54. Jeffs SA, Hall JE, Morris S. Comparison of morphine alone with morphine plus clonidine for postoperative patient-controlled analgesia. *Br J Anaesth.* 2002;89:424-427.
55. Park J, Forrest J, Kolesar R, et al. Oral clonidine reduces postoperative PCA morphine requirements. *Can J Anaesth.* 1996;43:900-906.
56. Marinangeli F, Ciccozzi A, Donatelli F, et al. Clonidine for treatment of postoperative pain: a dose-finding study. *Eur J Pain.* 2002;6:35-42.
57. Dunn LK, Durieux ME. Perioperative use of intravenous lidocaine. *Anesthesiology.* 2017;126:729-737.
58. Pasternak GW. Molecular insights into _ opioid pharmacology from the clinic to the bench. *Clin J Pain.* 2010;26:S3-S9.
59. Latta KS, Ginsberg B, Barkin RL. Meperidine: a critical review. *Amer J Therapeutics.* 2002;9:53-68.
60. Savage S, Covington EC, Heit HA, et al. Definitions related to the use of opioids for the treatment of pain. A consensus document from the American Academy of Pain Medicine, the American Pain Society and the American Society of Addiction Medicine 2001. Available at: <http://www.ampainsoc.org/advocacy/opioids2.htm>. Accessed November 5, 2010.
61. Hudcova J, McNicol E, Quah C, Carr DB. Patient controlled opioid analgesia versus conventional opioid analgesia for postoperative pain. *Cochrane Database Syst Rev.* 2006;(4):CD003346.
62. Macintyre PE. Safety and efficacy of patient-controlled analgesia. *Br J Anaesth.* 2001;87:36-46.
63. Weinger MB. Dangers of postoperative opioids. *Anesthesia Patient Safety Foundation Newsletter.* 2007;21:61-63.