

16. Kucukemre F, Kunt N, Kaygusuz K, Kiliccioglu F, Gurelik B, Cetin A: Remifentanyl compared with morphine for postoperative patient-controlled analgesia after major abdominal surgery: A randomized controlled trial. *Eur J Anaesthesiol* 2005; 22:378-85
17. Lee LH, Irwin MG, Lui SK: Intraoperative remifentanyl infusion does not increase postoperative opioid consumption compared with 70% nitrous oxide. *ANESTHESIOLOGY* 2005; 102:398-402
18. Gomez de Segura IA, Criado AB, Santos M, Tendillo FJ: Aspirin synergistically potentiates isoflurane minimum alveolar concentration reduction produced by morphine in the rat. *ANESTHESIOLOGY* 1998; 89:1489-94
19. Eger EI 2nd, Saidman LJ, Brandstater B: Minimum alveolar anesthetic concentration: A standard of anesthetic potency. *ANESTHESIOLOGY* 1965; 26:756-63
20. Criado AB, Gomez de Segura IA: Reduction of isoflurane MAC by fentanyl or remifentanyl in rats. *Vet Anaesth Analg* 2003; 30:250-6
21. Crawford MW, Hickey C, Zaarour C, Howard A, Naser B: Development of acute opioid tolerance during infusion of remifentanyl for pediatric scoliosis surgery. *Anesth Analg* 2006; 102:1662-7
22. Eger EI 2nd, Johnson BH, Weiskopf RB, Holmes MA, Yasuda N, Targ A, Rampil IJ: Minimum alveolar concentration of I-653 and isoflurane in pigs: Definition of a supramaximal stimulus. *Anesth Analg* 1988; 67:1174-6
23. Katoh T, Ikeda K: The minimum alveolar concentration (MAC) of sevoflurane in humans. *ANESTHESIOLOGY* 1987; 66:301-3
24. Criado AB, Gómez de Segura IA, Tendillo FJ, Marsico F: Reduction of isoflurane MAC with buprenorphine and morphine in rats. *Lab Anim* 2000; 34:252-9
25. Lindstedt SL, Schaeffer PJ: Use of allometry in predicting anatomical and physiological parameters of mammals. *Lab Anim* 2002; 36:1-19
26. Lang E, Kapila A, Shlugman D, Hoke JF, Sebel PS, Glass PS: Reduction of isoflurane minimal alveolar concentration by remifentanyl. *ANESTHESIOLOGY* 1996; 85:721-8
27. Castanelli DJ, Splinter WM, Clavel NA: Remifentanyl decreases sevoflurane requirements in children. *Can J Anaesth* 2005; 52:1064-70
28. Gustorff B, Nahlik G, Hoerauf KH, Kress HG: The absence of acute tolerance during remifentanyl infusion in volunteers. *Anesth Analg* 2002; 94:1223-8

## ■ ANESTHESIOLOGY REFLECTIONS

### The Edison Etherizer



To electrify North America, Thomas A. Edison (1847–1931) proposed using direct current (D.C.) rather than the alternating current (A.C.) suggested by his rival, George Westinghouse, Jr. (1846–1914). To undermine acceptance of A.C. for household use, Edison terminally “Westinghoused” test animals in 1887 and then advocated similar use of A.C. upon death-row inmates. When the State of New York tried Edison’s “Westinghouse [electric] chair” in 1888, the first victim survived a 17-second electrocution before succumbing to a 72-second one. This debacle and D.C.’s economic costs backfired on Edison, and America adopted his rival’s A.C. Over a half century after the botched electrocution, Thomas A. Edison, Inc., of New Jersey manufactured an apparatus for passing “multitudinous air streams” through an ether-adsorbing “channeled carbon mass” whose heat-conducting container was surrounded by a “crystallizable liquid.” Heats of “adsorption and solidification,” designed into this apparatus by 1946, were counteracting the chill of vaporizing ether, the inefficiency of which had plagued earlier bubble-through vaporizers. After inscribing the signature of “Thomas A. Edison” on the front of their “Edison Etherizer” (pictured above from the Wood Library-Museum Gallery), the New Jersey team powered it with A.C. Quite an ironic posthumous salute to one-time D.C.-advocate, Thomas Alva Edison! – (Copyright © the American Society of Anesthesiologists, Inc. This image appears in color in the *Anesthesiology Reflections* online collection available at [www.anesthesiology.org](http://www.anesthesiology.org).)

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