Evaluation of a Web-Based Buprenorphine Management Module for Perioperative Providers: A Pilot Study

Shane Volney, M.D.; Tracy Jackson, M.D.
Vanderbilt University

Learner Audience: Our web-based educational module is designed for use by perioperative providers, including anaesthesiology attendings, residents, SRNAs, CRNAs, and PACU nurses.

Background: Buprenorphine is a partial mu-opioid agonist that is frequently prescribed as an alternative to methadone therapy for opioid dependence. As providers require special certification to prescribe buprenorphine for the purposes of addiction, many physicians without this additional training are unfamiliar with buprenorphine's unique pharmacologic profile, which affects the utility of standard doses of other opioid agonists and antagonists. Improper administration of buprenorphine in combination with perioperative opioids may result in precipitated withdrawal, severely mismanaged pain, or potentially serious adverse events in the perioperative setting.

Needs Assessment: National data indicate increasing use of buprenorphine for opioid addiction, evidenced by a 400% increase in certified prescribers since 2002. Given its expanding role, it is imperative that clinicians understand how to manage patients on buprenorphine in the perioperative period, when other opioids are routinely indicated. Currently, there are limited guidelines and minimal evidence-based data for perioperative buprenorphine management. Web-based learning education is a promising method for providing high quality, up-to-date, and immediately accessible knowledge. Interactive web-based curricula are particularly attractive for complex topics, such as the development of individualized buprenorphine anaesthetic management strategy.

Hypothesis: We hypothesized that knowledge testing among perioperative anaesthesia providers would demonstrate deficits amenable to educational intervention, and that administration of our web-based module would result in significant improvement in tested knowledge.

Curriculum Design: Our learning module was based on a needs assessment of learners. The module curriculum was developed using a standard, systematic approach in conjunction with peer reviewed guidelines for high quality web-based module design. The module includes a didactic section on buprenorphine pharmacology followed by a series of interactive clinical scenarios with instant management feedback. The module includes both pre-test and post-test evaluation, consisting of 10 identical questions developed to gauge practical knowledge relative to perioperative buprenorphine use.

Outcome: Twenty six pilot study participants were selected, including anesthesiology attendings, residents, fellows, SRNAs, CRNAs, and PACU nurses. The mean pre-test score was 33% (range 27%-80%), revealing suboptimal baseline competence in buprenorphine pharmacology and perioperative anesthetic management. Immediately after utilizing the web-based module, the mean post-test score was 76%, reflecting a 230% improvement in tested knowledge. Reproducibility, durability, and impact will be assessed in the future by exposing the module to additional groups of providers; by administering the post-test (without module review) at intervals 6 and 12 months; and by developing Likert scales to assess likelihood of attitudinal change which might effect future prescribing practice.