Hasoon J, Nguyen A, Urits I, Robinson C, Viswanath O, Kaye AD. A Need for Further Education on Buprenorphine in Pain Medicine. *Health Psychology Research*. 2023;11. doi:10.52965/001c.74958

General

# A Need for Further Education on Buprenorphine in Pain Medicine

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Keywords: buprenorphine, chronic pain, acute pain, pain medicine, opioids, education

https://doi.org/10.52965/001c.74958

Health Psychology Research

Vol. 11, 2023

With the ongoing opioid epidemic in the United States there has been a strong transition towards utilizing multi-modal analgesia, interventional procedures, and non-opioid medications when managing acute and chronic pain. There has also been an increased interest in utilizing buprenorphine. Buprenorphine is a novel long-acting analgesic with partial mu-opioid agonist activity that can be utilized for analgesia as well as opioid use disorder. Buprenorphine also has a unique set of side effects as well pharmacodynamic and pharmacokinetic properties that require special attention, especially if these patients require future surgical interventions. Given the increased interest in this medication we believe that there needs to be increased education and awareness regarding this medication amongst physicians, specifically pain management physicians and trainees.

## LETTER TO THE EDITOR

With the ongoing opioid epidemic in the United States there has been a strong transition towards utilizing multi-modal analgesia, interventional procedures, and non-opioid medications when managing acute and chronic pain.[1–4] There has been an increase in interest in the utilization of buprenorphine as an analgesic as well as for opioid use disorder (OUD).[4–7] Buprenorphine is one of only three medications that have U.S. Food and Drug Administration (FDA) approval for medication treatment of OUD.

Buprenorphine is of intertest to pain management physicians as it is a partial mu-opioid agonist as well as an inverse agonist at kappa receptors, and an antagonist at delta receptors.[4–9] The kappa-opioid effects may provide anti-depressant effects. Buprenorphine also has a high-affinity binding along with a ceiling effect. The unique ability of buprenorphine to have partial agonism at the mu-opioid receptor allows the medicine to provide analgesia without severe adverse events such as respiratory depression and the euphoria obtained by traditional opioids.[4–9] Additionally, there are a substantial number of patients who utilize benzodiazepines for medical reasons in addition to opioid medications, which increases the risk of opioid overdose.[10] Although the risk is not entirely mitigated when combining benzodiazepines with buprenorphine, there appears to be a better safety profile with this medication compared to traditional scheduled II opioids. Additionally, physicians may choose to administer this medication over traditional opioids as it is a schedule III medication with less abuse potential than traditional schedule II opioids typically used for chronic pain.

Given the increasing use of this medication we believe physicians should be aware of some caveats when treating patients who are on buprenorphine. Physicians and trainees should be aware that buprenorphine has many side effects and is associated with headaches, nausea, vomiting, constipation and QTc prolongation at higher doses.[5–7] There are also significant considerations to be aware of when patients who are on buprenorphine require surgical procedures. These patients may be present significant challenges to anesthesiologists and pain management specialists who are unaware of the pharmacodynamics and pharmacokinetics of buprenorphine. Previous guidelines recommended discontinuation of buprenorphine for patients who require full mu-opioid agonists.[11] However, recent studies have demonstrated that patients who are managed on buprenorphine still have mu-opioid binding sites available and additional full mu-opioid agonists may effectively treat acute pain. There are recent guidelines to help physicians and pain management specialists better understand the management of acute postoperative
pain for patients who are on chronic buprenorphine therapy.[7,12] Typical recommendations include preoperative planning with pain management specialists and continuation of buprenorphine when possible. Postoperative and acute pain management should include multimodal analgesia including regional anesthesia whenever possible. Additionally, there should be an appropriate postoperative plan for discharging patients who may require opioid tapering and reestablishment of baseline buprenorphine therapy.

Ultimately, buprenorphine has unique pharmacological properties that have made it more commonly seen for chronic pain and OUD. Buprenorphine displays a partial agonist at the mu-opioid receptor, is a schedule III medication with less abuse potential, and demonstrates a better safety profile with less respiratory depression. Buprenorphine also has a unique side effect profile including QTc prolongation

as well as unique pharmacologic properties that can make managing acute surgical pain challenging. Due to the increasing use of this medication, we believe that there needs to be an increase in awareness of buprenorphine amongst anesthesiologist and pain management physicians as well as further education regarding buprenorphine and the formulations of this medication with residents, fellows, and trainees.

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