

A Novel Assessment of Longitudinal Buprenorphine Dose: Towards Defining the “Optimal” Dose

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Introduction: Buprenorphine is an accepted treatment for medication-assisted treatment of opioid use disorder (OUD). It can be prescribed daily in sublingual formulations with or without naloxone, or in longer-acting subcutaneous injections. Recently, some roadblocks towards prescribing buprenorphine were relaxed, leading to a rise in its use. However, there remains limited clinical guidance regarding approaches to optimal dosing, resulting in considerable variability in prescribing patterns, which undoubtedly affects patient adherence to treatment. In previous separate analyses of methadone dose, we found significant differences in dose by key demographic factors. We hypothesized that there may be parallel differences in buprenorphine dose.

Methods: We examined participant-level data from three NIDA Buprenorphine Clinical Trials conducted from 1996 to 2010. We calculated the longest and maximum buprenorphine dose for each participant who had tested negative for opiates throughout the trial. We use the dosage prescribed for the longest time to approximate “optimal” dose, that is, the buprenorphine dosage that best stabilizes a patient’s OUD symptoms and inhibits relapse.

Results: Both longest and maximum daily buprenorphine dose were significantly lower in black non-Hispanic (BNH) than in white non-Hispanic (WNH) participants (two tailed t-test). Both were lower in BNH than Hispanic participants, with the difference statistically significant for maximum dose. The variances of both longest and maximum dose were significantly higher in both WNH and Hispanic than in BNH participants (folded F-Test), demonstrating major dosage heterogeneities. There were no

significant differences in the variance or mean of longest or maximum dose between WNH and Hispanic participants or between female and male participants.

Conclusion: These results are a steppingstone toward understanding optimal buprenorphine dosing among diverse patient populations. The dosing differences observed between BNH and WNH merit further research. These data may improve understanding and contribute to improving clinical guidance for buprenorphine treatment.