

Submission ID: 84412

Title: Opioid Prescribing Patterns in Pediatric Migraine, 2009-2014

Category: Headache Disorders in Children and Adolescents

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Background:

Suboptimal pediatric migraine care can lead to decreased healthcare quality and increased healthcare costs. Of special concern is that in lieu of evidence based treatment, pediatric patients may be prescribed opioids as a first-line acute intervention. Using opioids as a first-line intervention increases the patient's risk for migraine chronification, medication overuse headaches, and treatment related safety issues. However, there is little research regarding the extent to which health care providers in the US prescribe opioids as a first-line acute migraine intervention. The current study leveraged EHR-derived data to assess opioid prescribing patterns for the acute treatment of pediatric migraine from 2009-2014.

Methods:

This retrospective, observational study utilized Epic EHR-derived data to identify children and teens ages 6-17 who presented with primary migraine and headache across four states in metropolitan and non-metropolitan areas to either primary care, specialty care, or Emergency Department/Urgent Care (ED/UC). Only a child's first encounter for primary migraine or headache was analyzed. Initial extraction identified nearly 75,000 unique patients presenting with migraine or headache (identified via ICD9 codes or text filters) from January 2009 – June 2014. Using algorithmic, rule-driven methodology to exclude patients whose headaches were possibly secondary to another medical disease, condition, or presentation, and those without any prescribed/recommended medication at their initial encounter, we identified 21,015 unique patients presenting to 1,284 unique providers. We were specifically interested in whether the patient was prescribed an opioid as defined by the Systematized Nomenclature of Medicine. Patient characteristics extracted from the EHR included age, gender, race/ethnicity, insurance status, and how migraine/headache was identified (diagnosis of Migraine, diagnosis of Headache, or chief complaint undiagnosed). Provider characteristics of interest included provider specialty (primary, specialty, ED/UC) and address/zip code of treatment location to determine treatment location as "metropolitan" or "non-metropolitan". Hierarchical linear modeling (HLM) was used to examine Level 1 variables (patient characteristics) nested within Level 2 variables (provider characteristics) influence on opioid prescription (yes vs. no). Data analyses were performed using HLM.

Results:

The population was predominantly female (57%), Caucasian (78%), with a mean age of 12.08 (+/- 3.46). Among this population, 18% were diagnosed with migraine, 46% were not formally diagnosed, and 37% were diagnosed with headache. Overall, 3,317 (16%) were prescribed an opioid. Of note, as age increased, the likelihood of being prescribed an opioid increased (OR = 1.14, 95% CI = 1.12-1.16, $p < .001$). Girls were more at risk for being prescribed an opioid (OR = 1.16, 95% CI = 1.08-1.21, $p < .001$) and Caucasian children were at higher risk (OR = 1.18, 95% CI = 1.08-1.31, $p < .001$). Patients diagnosed with migraine (OR = 1.63, 95% CI 1.34-1.89, $p < .001$) or diagnosed with headache (OR = 1.60, 95% CI 1.42-1.80, $p < .001$) were more likely to be prescribed an opioid than those with no formal diagnosis. Providers in ED/UC setting (OR = 2.02, 95% CI = 1.70-2.39, $p < .001$) and specialty settings (OR = 1.91, 95% CI = 1.30-2.82, $p = .001$) were more likely to prescribe an opioid than those in primary care.

Conclusion:

The current findings indicate that nearly one of every six children who receives medication are prescribed an opioid during their initial encounter for primary migraine or headache. The rates are even higher among older teens ages 15-17. Opioid prescription rates are twice as high in the ED/UC or specialty setting relative to primary care. The current findings suggest that a significant need exists to increase provider awareness of the benefits of optimal migraine care and the potential dangers of prescribing opioids for children and teens with migraine.