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Title: Pediatric Migraine Treatment: Poor Adherence to Evidence-Based Acute Medication Guidelines

Category: Headache Disorders in Children and Adolescents

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Background:

Medication classes effective for treating acute migraine pain in children and teens have been identified. However, there is little research regarding the extent to which health care providers in the US provide care for children and teens with migraine consistent with evidence based guidelines. The current study leveraged EHR-derived data to assess adherence to guidelines 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 indicated that nearly 75,000 unique patients presented for care 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, we identified 38,926 unique patients presenting to 1,617 unique providers. We were specifically interested in whether the patient was prescribed or recommended (for medication available without a prescription) evidence-based medication for the acute treatment of migraine. Medications/medication classes were labeled as evidence-based if the medication has been designated as Level A or B in published guidelines, been considered best evidence in published expert consensus, or had FDA approval. 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 guideline adherence (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, 17,911 (46%) were not prescribed or recommended any medication and 32,659 (84%) were not prescribed or recommended evidence-based medication. Of note, girls likelihood of getting evidence-based medication was higher than boys (OR = 1.14, 95% CI = 1.07-1.21, $p < .001$) and those diagnosed with migraine were more likely to be prescribed evidence-based medicine than those without a diagnosis (OR = 4.71, 95% CI 4.17-5.33, $p < .001$) or diagnosed with headache ($p < .001$). Providers in metro regions were less likely to prescribed evidence-based medicine (OR = 0.65, 95% CI = 0.58-0.74, $p < .001$) and those in an ED/UC were less likely to prescribe any medication relative to those in primary care (OR = 0.78, 95% CI = 0.67-0.91, $p < .001$).

Conclusion:

The current findings indicate that too many children are not getting any medication and too few are receiving care consistent with evidence based guidelines. The best care occurs for children diagnosed with migraine treated in a primary care setting. Five of every six children and teens are receiving suboptimal acute migraine care and as such a significant need exists to increase provider awareness of the benefits of optimal migraine care for children and teens with migraine.