

Upping the Migraine Intelligence Quotient: Real-world data sheds light on prevalence rates, providers and treatment variation



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Introduction

Headache disorders including migraine are highly prevalent globally, estimated to affect more than 50% of the population at any point and time. In the U.S., migraine patients spend an average of \$9,000 more than those without the diagnosis.¹ Prevalence estimates in the U.S. range between 12% to 16% of the population, with a predominance in females afflicted with the condition and variation of occurrence across race and ethnicity.²

For patients diagnosed with migraine, healthcare provider specialty utilization could correlate to certain populations and selected treatment pathways.³ It is also reported that patients who do not receive appropriate treatment access the health system to a greater extent.^{4,5} Regardless of social determinants of health (SDOH), these patients are at higher risk for developing co-occurring conditions.⁶

Lastly, drug intolerance, non-response, or non-preference could have a race or ethnicity-specific driver to more complementary and alternative medicine (CAM) therapies resulting in better management of migraine and less utilization of acute management.⁷

Migraine is a costly, prevalent condition and as such life sciences companies and healthcare providers are constantly looking for ways to better treat this common condition.

Leaders at these healthcare organizations, however, need more intelligence to better meet the challenges associated with treating the scores of people who suffer from migraine headaches. Claims data can provide insights needed to further hone migraine treatment.

The PurpleLab Migraine Study: Objectives

- Understand variation of migraine prevalence within patient and treatment cohorts and observe shifting that exists across provider specialties in relation to migraine treatment.
- Illustrate the patient journey showing provider refinement, defined as shifting from ED and general medicine utilization to more specialized provider care that may align with patient preference and better outcomes.
- Observe if a relationship exists between racial and ethnically diverse patients seeking care and specific HCP specialties, including alternative medicine providers.

The PurpleLab Migraine Study: Methods

The study leveraged PurpleLab's HealthNexus™ reporting and data analytics to examine migraine treatment cohorts in relation to shifting across healthcare provider specialties, therapeutic area and drug classes. The analysis was culled from real-world data of approximately 10 million Americans with a diagnosis of migraine who sought care from a variety of providers. More specifically, U.S. commercial, Medicaid and Medicare Advantage claims were analyzed from January 2018 to June 2024 in out-patient facility, professional and pharmacy for male and female patients 18 to 84 years of age.

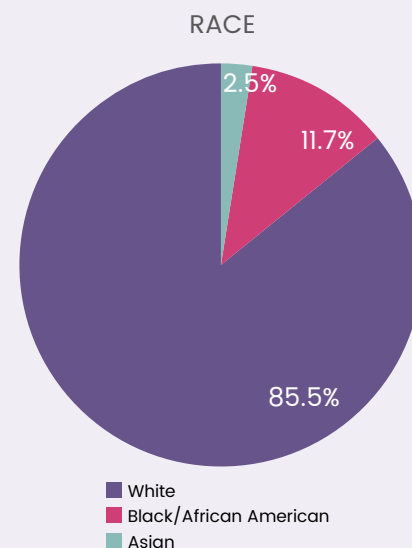
Healthcare provider specialty, payer mix, SDOH, standard of care drug therapy, other procedures to manage migraines, and complementary to identify patterns in migraine care delivery and treatment.

The PurpleLab Migraine Study: Results

The study was based on a cohort analysis that consists of patients diagnosed with migraine and treatment pathways including drugs and other procedures, focused on diagnosis and intersection groups.

Patients with migraines⁶

- Overall, more than 85% of patients diagnosed with migraines were between 18-64.
- Male-to-female distribution of 80% and 20%, respectively. In females only, more than half of patients in the migraine cohort were between 18-54 years.
- Race/Ethnicity representation: Asian (2.5%), Black/African American (11.7%) and white (85.5%).



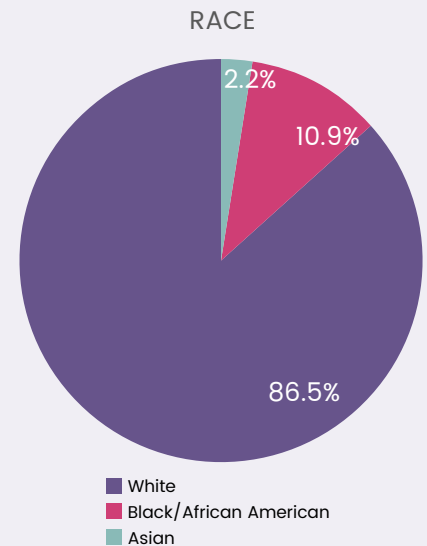
Male-to-female distribution of **80% and 20%**, respectively. In females only, more than half of patients in the migraine cohort were between 18-54 years.

Patients with migraine and treated with drugs

- Migraine Dx + All Drugs: Patients with a migraine diagnosis and treated with migraine drugs.
- Age and race of patients treated with migraine drug.
- Same gender and age distribution as above except for an increase in the 18–24-year age group.

Race of migraine patients treated with drugs

- Lower representation of Asians (2.2%), higher for Black/African American (10.9%) and slightly higher for white patients (86.5%).



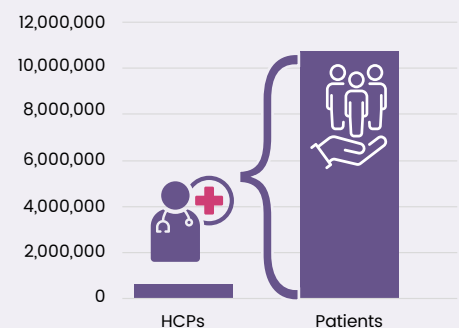
PurpleLab Migraine Study: Provider insights

Providers attending patients diagnosed with migraine are managing the condition by using treatment pathways that include drugs, and other procedures. The study focused on intersection groups and distribution by healthcare provider specialty and sub-specialty using National Provider Identifier (NPI) specialty taxonomy for each cohort. Advanced Practice Providers (APP), an additional categorization that combined physician assistant and nurse practitioner providers, was used for reporting purposes.

Healthcare providers treating patients with migraine⁶

- 632,633 HCPs attended to 10,754,520 patients diagnosed with migraine.

HCP Attending To Patients Diagnosed with Migraines



Small Number of Providers Treat Majority of Patients

- 90,942 HCPs representing only 14.38% of all HCP's with at least 1 claim attended 60% of all patients.

Top specialists treating migraine patients

- HCP specialty distribution of top providers caring for patients diagnosed with migraine are represented to a greater extent in Psychiatry & Neurology (30.28%), General Medicine (29.35%) and Emergency Medicine (12.34%).
- Advanced Practice Providers (APP) represent 6.24%, Pediatrics (5.84%) and Diagnostic Radiology (3.71%), with the remaining percentage in other specialties.

Significant Insight: The majority of care appears to occur in the ED, and with general and neurological medicine for initial migraine diagnosis.

Providers treating migraine patients with drugs

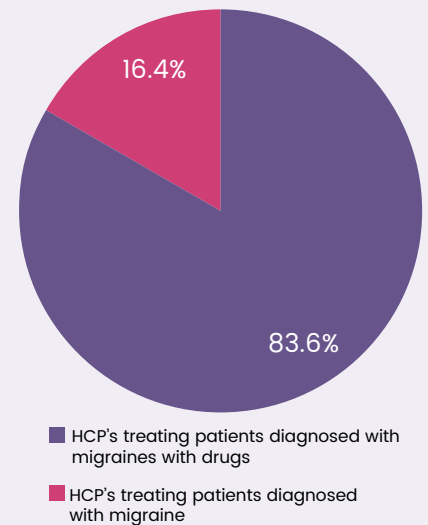
- Number of providers treating the majority of patients with drugs; specialties treating the most migraine patients with drugs.
- 185,091 HCPs attended 2,074,831 patients diagnosed with migraine that had drug treatment.

Number of providers treating majority of patients with drugs

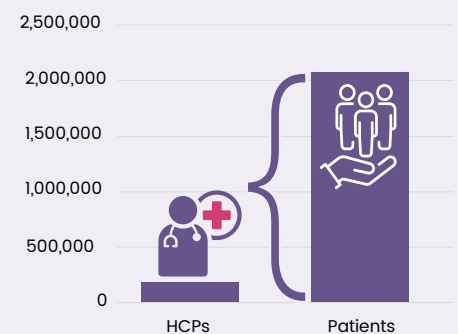
- 30,347 HCPs representing only 16.40% of all HCP's with at least 1 claim attended 60% of all patients.

PROVIDERS TREATING WITH DRUGS

Number of Providers Treating Patients with Migraines with Drugs



Providers is Treating Patients Diagnosed with Migraines with Drugs



Top specialties treating migraine patients with drugs

- HCP specialty distribution of top providers caring for patients diagnosed with migraine and treated with migraine-specific therapy has higher representation in Psychiatry & Neurology (52.58%) and APPs (13.98%), and slightly lower in General Medicine (23.40%) and Pediatrics (3.57%).
- Emergency Medicine is lower (2.04%) and the remaining percentage is in other specialties.

Significant Insight: A notable shift is observed from acute Emergency Medicine to specific HCP specialty care management after initial diagnosis.

Providers treating patients with other treatments⁶

- 22,187 HCPs attended 911,011 patients diagnosed with migraine who had treatment with other procedures.

Providers treating majority of patients with other treatments

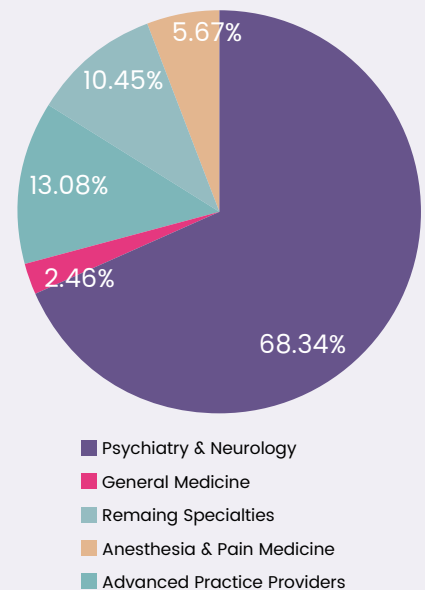
- 2,562 HCPs representing only 11.55% of all HCP's with at least 1 claim attended 60% of all patients.

Top specialists treating patients with other treatments

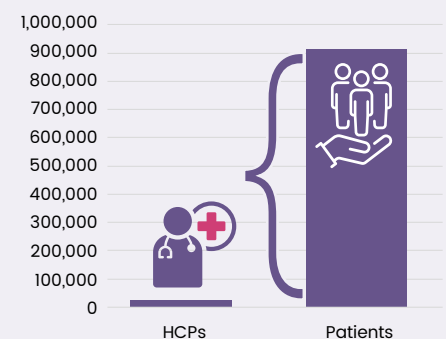
- HCP specialty distribution of top providers caring for patients diagnosed with migraine treated with other procedures, e.g., chemical denervation, corticosteroid or anesthetic injection, has the highest representation in combined Psychiatry & Neurology (68.34%) and Anesthesia & Pain Medicine (5.67%) provider specialty.
- Lowest with APP and General Medicine providers (13.08% and 2.46%).
- Emergency Medicine is not represented in the top provider distribution.

PROVIDERS TREATING PATIENTS WITH OTHER TREATMENTS

Specialties Treating Patient Diagnosed with Migraines with Other Treatments



Provider is Treating Patients Diagnosed with Migraines with Drugs



Significant Insight: An observed shift to interventional therapy provider specialty and low to no acute Emergency Medicine provider specialty for patients that seek CAM therapy defined by other procedures.

The PurpleLab Migraine Study: Why it matters

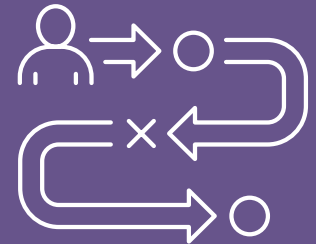
The PurpleLab analysis sheds light on variations of migraine prevalence within patient and treatment cohorts. The analysis uncovers a few key insights from the data including the shifting that exists across healthcare provider specialty in relation to migraine treatment approaches.

The patient journey comes into focus via the real-world data analysis. Most notably, patients commonly are sent on a path that includes shifting from ED and general medicine utilization to more specialized provider care. Utilization of acute and more general healthcare provider specialties is a condition management strategy early in the migraine treatment journey. However, once the treatment pathway evolved, condition-specific providers managing patients for ongoing care without a reverse shifted to general and ED providers. In conclusion, this evolving pattern of HCP specialty shifting in migraine management can potentially align with diverse patient preferences and better outcomes.

Additionally, aligning patient-preferred migraine therapy may reduce the use of acute management and drugs that can exacerbate the condition and lead to more disability.

Though claims data provides rich insights into the patient journey, like with any research study, this study has limitations including:

- Racial and ethnic variation related to the condition is not well captured in claims data.
- Inappropriate diagnosis and treatment of migraine across diverse populations could skew the numbers.
- Even if treatment is sought by patients, there is a lack of visibility with alternative treatments and therapies in claims data.



The patient journey comes into focus via the real-world data analysis. Most notably, patients commonly are sent on a path that includes shifting from ED and general medicine utilization to more specialized provider care.

- Healthcare provider utilization could correlate to certain populations that have experienced drug intolerance or non-response and have specific treatment preferences, such as complementary and alternative medicine, and other non-drug therapy procedures. Such patient-preferred migraine therapy could reduce the use of acute management and drugs.

Further analysis of additional data sets is needed to fill in these gaps. For example, incorporating census data into the analysis to augment race and ethnicity claims data to detect gaps that more accurately identify migraine estimates in the Asian American population, (closer to what is reported in the literature), in an attempt to operationalize and to adjust the methodology with weighting.

Tapping into the intelligence

What can clinical and commercial life sciences teams do with this information?

Having an analytics platform that can show granularities in the patient journey using real-world data is key to better understanding condition and treatment patterns across diverse populations with greater confidence.

The right analytics platform can capture variation in patient utilization of care from healthcare provider specialists that correlates to specific treatment pathways, illustrating provider refinement that shifts from acute and general medicine to more specialized provider care.



Patients who do not receive the right care have been shown to access the health system to a greater extent and are at higher risk for co-occurring health conditions, increasing the burden and cost of treating the disease.

With this analysis in hand, life sciences marketers can more strategically tailor their messaging, target audiences and creative strategies. For example, with this knowledge, life sciences marketers can:

- **Better tailor marketing to key patient demographics.** According to the data, young females are more likely to be affected by migraine and of that demographic, more than half of patients in the migraine cohort were between 18-54 years. Ensuring your targeting aligns to this demographic as well as tailoring creative and messaging is key to reaching migraine sufferers.
- **Craft messages that reach the providers who most commonly diagnose migraine.** Psychiatrists, neurologists, general medical providers and emergency medical providers are more likely to diagnose migraines. These should be of particular focus for healthcare provider targeting. Tailoring messaging, channel selection and creative to these professionals is key.
- **Account for the fact that some migraine sufferers might not be fully represented in the data.** The bulk of the data show that most migraine sufferers are white; however, inappropriate diagnosis and treatment of migraines across diverse populations may contribute to this white-skewing population. It may be worthwhile to include diverse populations in direct to consumer targeting strategies especially during a new drug or therapy launch. Additional educational advertising may be needed to ensure diverse populations and the providers that treat them are aware of your brand.

Life sciences sales and operations teams can effectively manage strategic sales initiatives. For example:

- Psychiatrists, neurologists, general medical providers and emergency medical providers are more likely to diagnose migraines. Sales teams selling migraine medications or therapies



According to the data, young females are more likely to be affected by migraine and of that demographic, more than half of patients in the migraine cohort were between 18-54 years.

should prioritize these HCPs in their outreach vs. those providers less likely to diagnose migraine.

- Providers whose patient populations consist mostly of women 18-54 should be prioritized in outreach strategies.

Clinical life sciences teams can use this information to support targeting and segmentation of investigators for clinical trials. For example:

- More understanding of various treatment methods for diverse patient populations is needed. Providers with diverse patient populations should be prioritized for inclusion in clinical trials.

The following reports in PurpleLab's HealthNexus platform were used in this analysis to generate insights into patient and provider populations:

Cohort Puller Report: configures patient cohorts using ICD Code, CPT Code, Rx, demographics or by using a patient or provider list.

Experience Report and Overlap Report: Generates insights into provider diagnosis and treatment patterns based on claims and treated patient counts.

Medical codes used in the analysis:

1. Migraine diagnosis: ICD10CM for migraine and migraine subtypes in addition to MS-DRG for migraine headache.
2. Migraine drugs: NDCs and HCPCS for selective serotonin (5HT) agonists or triptans, calcitonin gene-related peptide (CGRP) antagonists (monoclonal antibody and gpants), botulinum toxins (per approved and guideline indications), ergot-type drugs and combinations, other migraine combinations, and homeopathic migraine preparations.
3. Other Procedures: ICD10 procedure coding for chemodenervation, anesthetic agents and HCPCS coding for botulinum toxin agents.



The bulk of the data show that most migraine sufferers are white; however, inappropriate diagnosis and treatment of migraines across diverse populations may contribute to this white-skewing population.

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Who is PurpleLab™?

PurpleLab™ is a health-tech company driven by one clear philosophy: outcomes matter most. We help organizations drive decisive action based on precise insights from real-world data – with the ultimate goal of giving everyone a fighting chance at the best possible health outcome.

What will you discover today? Reach out to info@purplelab.com to learn more.