Improving Migraine Care in Wisconsin: Insights from WCHQ Data

Introduction

This report marks the beginning of a multi-year effort to elevate migraine care across Wisconsin. With focused collaboration and continued data sharing, we can reduce disparities, strengthen care quality, and improve the lives of those affected by migraine.

Migraine is a prevalent and disabling neurological condition affecting over 40 million Americans. In Wisconsin, the burden of migraine has been historically underrecognized in primary care. This final report summarizes the findings of WCHQ's multi-system data analysis and stakeholder collaboration aimed at improving migraine care pathways. Our goal is to use this analysis to guide primary care-based interventions that increase access to timely, effective, and equitable migraine management.

The Burden of Migraine in Wisconsin

Migraine is one of the top causes of disability globally, significantly affecting quality of life, workforce productivity, and healthcare utilization. Despite affecting approximately 12% of the population nationwide, only 3.5% of adults were seen in 2024 for a migraine.

Only 6.3% of healthcare providers are familiar with the American Academy of Neurology guidelines for preventive migraine treatment[1]. This lack of training results in missed diagnoses and inconsistent care. However, once patients do receive a diagnosis, care can still be hard to come by. Due to neurologist shortages across Wisconsin, appointment wait times often exceed three months, and only 27.4% of patients seen for migraines in 2024 were evaluated by a neurologist. Neurology wait times in Wisconsin are typically longer than three months.

Consistent and streamlined care is vital for migraine patients to not only improve the quality of life for those patients but also reduce a leading cause of absenteeism and reduce unnecessary emergency department (ED) visits. Migraine absenteeism costs U.S. employers an estimated $19 billion annually. For health systems, this translates into both direct costs (ED, imaging, prescriptions) and indirect costs (lost productivity, care fragmentation). Those aged 30-59 make up a disproportionate number of patients being treated for migraines both in ambulatory and emergency department settings. Additionally, those with commercial insurance are more likely to utilize the emergency department compared to those with Medicaid, Medicare, or no insurance.

WCHQ Data Overview - Monthly Analytic Overview: What WCHQ Examined

Over the course of the 12-month project, WCHQ examined migraine-related data monthly to surface key trends, disparities, and opportunities for care improvement. Each month, WCHQ analyzed different aspects of care and patient experience. This iterative process informed our overall understanding of where health systems could act.

Key monthly focus areas included:

- Patient demographics across systems
- Diagnosis coding and conversion from headache to migraine
- Access to care across primary care and neurology
- Medication prescribing patterns

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- Utilization of emergency and high-cost care
- Gaps in care continuity and follow-up

These analyses informed the creation of system-specific reports, identified patients for potential outreach, and supported the development of targeted interventions.
To further support implementation, ten Wisconsin health systems met with WCHQ to review their organization-specific data. Each of these systems identified actionable insights and is planning to use the findings to inform future interventions aimed at improving migraine diagnosis, care coordination, and treatment within their respective settings.

Analyzing Adult Migraine Patients – Diagnosis Trends
WCHQ analyzed data from over 3.4 million adult patients across its member health systems with visits in 2024. Among these:

- **Seen for Migraine**: 99,337
- **Seen for Headache**: 97,544
- **Seen for Both Migraine and Headache:** 19,867

Demographic insights:

- **Gender**: Of the 119,204 migraine patients, approximately 80% were female and 20% were male, reinforcing concerns of underdiagnosis among men.
- **Age**: Patients between the ages of 30–59 made up 44.3% of the WCHQ adult population but made up 60.9% of the migraine population.
- **Race/Ethnicity**: Despite migraine and headaches being diagnosed at roughly the same frequency across the population, the Black/African American and Hispanic/Latino populations were nearly twice as likely to receive a headache diagnosis rather than migraine.
- **Payer**: Patients with Medicaid insurance are at greater risk of being underdiagnosed, as they were 30% more likely to be diagnosed with a headache over a migraine.
- **Geography**: Fewer discrepancies were observed at the geographical level. Urban patients were diagnosed/seen for a migraine 5% more often than rural patients. Even so, headache was used as the diagnosis nearly 50% more often for patients residing in urban underserved areas.

Diagnostic Conversion: From Headache to Migraine
Among patients who had multiple headache-related visits, a substantial number were later diagnosed with migraine. This conversion pattern illustrates missed opportunities for early recognition and intervention. Within the WCHQ dataset:

- Over 50% of patients who eventually received a migraine diagnosis had at least one prior visit coded as a headache.
- Median time to migraine diagnosis from the first headache-related visit varied widely, with many patients waiting months or longer.
- Diagnostic conversion was more likely when patients were seen by neurology, although access to neurology was limited.

These findings highlight the importance of training primary care providers to recognize recurring headache patterns that may indicate migraine and using decision support tools to guide timely diagnosis.

Care Pathway Breakdown: Primary vs. Specialty Care
A critical component of WCHQ's analysis was understanding where patients received migraine-related care and whether that care was coordinated across settings. The data revealed:

- A majority of migraine patients (72.3%) were seen in primary care settings only.
- Patients seen by a neurologist were 50% more likely to receive a preventive medication prescription. Acute medication documentation/prescribing is also 17% more likely in a neurology setting, suggesting opportunities for additional care prior to a neurology visit.
- Loss to follow-up was a notable issue—patients often had an initial visit for headache or migraine but did not return for further evaluation or treatment planning.
- In some cases, patients cycled between urgent care and EDs rather than receiving ongoing outpatient care.

Analyzing Adult Migraine Patients – Access to Preventive Medications

Nearly 275,000 migraine patients were reviewed for medication treatment. 37.3% were found to be prescribed a preventive medication (Appendix – Table 1), compared to 50.5% of patients with an acute medication (Appendix – Table 2). Note, because acute medications are commonly available over the counter, 50.5% may be an underestimation.

- **Access to Neurology:** Nearly 60% of patients that had seen a neurologist had a prescription for a preventive medication

- **Gender: M**ale patients are prescribed preventive medications at roughly the same rate as females, despite making up a smaller portion of the migraine population.

- **Age:** As patients age, they are more likely to have access to preventive medications. Only 26.3% of patients between 18-29 had access, while nearly 45% of patients above 50 had access.

- **Race/Ethnicity:** The Asian/Pacific Islander population, at 29.5%, is slightly less likely to have access to preventive medications, compared to 37% for the other groups

- **Payer:** Medicare patients, at 44.4% are more likely to have access to preventive medications compared to patients with other payer types

- **Geography:** Patients in urban underserved and urban areas are more likely to have access to preventive medications (40.7%), while patients in urban advantaged areas are under the average, at 30.6%.

WCHQ's analysis found low rates of preventive medication use among diagnosed patients:

- 37.3% of diagnosed migraine patients were prescribed a preventive medication.
- In contrast, more than 50% received prescriptions for acute treatments only (e.g., triptans, NSAIDs).
- Preventive use varied widely by health system and payer type, with Medicaid patients less likely to receive preventive options.
- Systems with more consistent neurology engagement and care pathways showed higher prescribing rates for preventives.

Barriers to preventive medication use include:

- Lack of provider familiarity with updated treatment guidelines.
- Limited patient follow-up, reducing opportunities to initiate or adjust preventive therapy.
- Insurance or cost-related hurdles, especially for newer CGRP inhibitors.

Improving preventive prescribing practices in primary care could help reduce ED visits, improve outcomes, and align care with national standards. Education, clinical decision support, and team-based care models are key to closing this gap.

Analyzing Adult Migraine Patients – Emergency Department Visits
8,466 patients visited the emergency department for a migraine or headache as the primary diagnosis in 2024, accounting for 18,784 emergency department visits.

- **Gender:** Female patients made up 85.7% of the patients seen in the ED
- **Age:** Patients under 60 made up 85.7% of all migraine-related ED visits.
- **Race/Ethnicity:** Black/African American patients made up 5.9% of patients seen for a migraine, but 10.0% of the patients seen in the ED for a migraine.
- **Geography:** The race/ethnicity trends mirror geography trends. Those in urban underserved areas made up 7.7% of the migraine population, but 10.1% of the population treated for migraines in the ED
- **Payer:** Patients with a Medicaid payer are also disproportionally seen in the ED. Medicaid patients made up 11.9% of patients seen for a migraine but made up 23.0% of patients seen in the ED for migraines.
- Commercial patients accounted for nearly 63% of ED visits for migraines.

These findings point to gaps in care continuity and the need for integrated care pathways that connect primary and specialty care and support patients through follow-up and ongoing management. Strengthening referral processes and empowering primary care teams with migraine-specific tools and protocols are essential next steps.

Summary of Identified Issues
Through five years of data collection and analysis, WCHQ has identified persistent and systemic issues in migraine care across Wisconsin. These challenges impact patients, providers, and health systems and provide a clear roadmap for where interventions are needed:

- **Underdiagnosis in primary care**: Many patients with recurring headache symptoms are not formally diagnosed with migraine, delaying appropriate care.
- **Lack of neurology resources**: Extended wait times for neurology appointments, often exceeding three months, make timely specialist care difficult to access.
- **Limited provider training on migraine**: Primary care teams often lack the training or confidence to identify and manage migraine effectively.
- **High reliance onemergency and urgent care visits**: Without adequate outpatient treatment plans, patients frequently resort to ED visits for acute migraine relief.
- **Fragmented care and poor follow-up continuity**: Patients are often lost to follow-up after initial diagnosis or treatment, and referrals to specialists may not be completed.
- **Inappropriate neurology referrals**: Some patients with straightforward migraine management needs are referred to specialty care, while those with more complex cases are not prioritized.

These issues contribute to delayed diagnoses, inconsistent care, increased healthcare costs, and poorer outcomes for migraine patients. Addressing them requires coordinated action across systems, disciplines, and care settings.

What's Next

WCHQ and its member health systems are committed to using these insights to drive measurable improvements in migraine care. Building on the findings of this report, the following next steps are planned:

- **Pilot interventions**: Several health systems will implement targeted pilot programs that use data to identify patients who may benefit from earlier diagnosis, preventive treatment, or improved follow-up.
- **Training and education**: WCHQ will collaborate with clinical partners to offer education for primary care teams focused on migraine diagnosis, treatment, and referral best practices.
- **Standardized pathways**: Member systems will explore the development of standardized care pathways and clinical decision tools for migraine in primary care settings.
- **Ongoing measurement**: WCHQ will continue to track key metrics on diagnosis rates, medication usage, ED utilization, and disparities—providing quarterly updates to participating systems.

Appendix

Table 1: Preventive Medications

Medication Class	Generic Name	RxCUI
Injectable		
	eptinezumab-jjmr	2283045
	erenumab-aooe	2045614
	fremanezumab-vfrm	2056690
mab-CGRP Receptor Antagonists	galcanezumab-gnlm	2058868
Neruotoxin	onabotulinumtoxinA	1726293
Oral		
	amitriptyline	704
Tricyclic Antidepressant	notriptyline	7531
ACE Inhibitor	lisinopril	29046
Angiotensin Receptor Blocker	candesartan	214354
	divalproex sodium	266856
	topiramate	38404
Anticonvulsant	valproic acid	11118
	atenolol	1202
	metoprolol tartrate	203191
	metoprolol succinate	221124
	nadolol	7226
	propranolol	878
Beta-blocker	timolol	10600
CGRP Antagonist	atogepant	2571813

	rimegepant	2282307
NMDA Receptor Antagonist	memantine	6719
Selective Serotonin- and Norepinephrine-Reuptake Inhibitor (SNR)	duloxetine	72625
	venlafaxine	39786

Table 2: Acute Medications

Medication Class	Generic Name	RxCUI
Oral		
Analgesics	Acetaminophen, including combinations	161, 108038, 689576
Anti-emetics	chorpromazine	2403
	metoclopramide	6915
	prochlorperazine	8704
	promethazine	8745
Ditans	lasmiditan	2256930
Ergotamine derivatives	ergotamine/caffeine	214336
	ergotamine (sublingual)	4025
Gepants (CGRP antagonists)	rimegepant	2282307
	ubrogepant	2268216
NSAIDS, including combination products	aspirin, including combinations	1191, 687078, 214250, 466584, 689519
	celecoxib	140587
	diclofenac	3355
	flurbiprofen	4502
	ibuprofen, including combinations	5640
	indomethacin	5782
	ketoprofen	6142
	ketorolac	35827
	mefanamic acid	6693
	nabumetone	31448
	naproxen	7258
Triptans	almotriptan	279645
	eletriptan	231049
	frovatriptan	228783
	sumatriptan/naproxen	797426
	naratriptan	141366
	rizatriptan	88014
	sumatriptan	37418
	zolmitriptan	135775
NSAIDS	keorolac	35827

	sumatriptan	37418
Triptans	zlmitriptan	135775
Ergotamine derivatives	dihydroergotamine mesylate	203176
Gepants (CGRP antagonists)	zavegepant	2637955
Rectal		
Analgesics	acetaminophen	161
	prochlorperazine	8704
Anti-emetics	promethazine	8745
Ergotamine derivatives	ergotamine/caffeine	214336
	aspirin	1191
	indomethacin	5783
NSAIDS	naproxen	7259
Injectable		
Anticonvulsants	valproate	40254
	chlorpromazine	2403
	droperidol	3648
	metoclopramide	6915
	prochlorperazine	8704
Anto-emetics	promethazine	8745
Ergotamine derivatives	dihydroergotamine mesylate	203176
Magnesium	magnesium sulfate	6585
	ibuprofen	5640
	indomethacin	5781
NSAIDS	ketorolac	35827
Triptans	sumatriptan	37418

Citation:

[1]Minen, M. T., Loder, E., Tishler, L., Silbersweig, D., et al. (2022). *Migraine diagnosis and treatment: A knowledge and needs assessment among primary care providers. Journal Name if available*, *Volume*(Issue), pages. “Very few were familiar with the American Academy of Neurology guidelines on preventative treatment (6.3%; 7/111)”