CGRP-inhibitor Utilization and Adherence in an Employer-Insured Migraine Population

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Introduction

- Migraine is considered the third most prevalent and seventh most disabling illness in the United States alone, affecting more than 36 million adults[1]
- Migraine affects people during the most formative and productive periods of their lives (20-35 years old)[2]
- Migraine costs the United States over $20 billion annually[3]
- Its lifetime prevalence is believed to be 19%; however, it still remains stigmatized and underestimated as a major clinical problem, underdiagnosed and undertreated[4,5]
- It is especially burdensome in the working population, with the highest rates of disability being reported in women ages 18-44[6]
- Calcitonin gene-related peptide (CGRP) is found throughout the trigeminovascular system, as well as in central regions of the brain, which is considered important for migraine pathogenesis[7]
- CGRP-inhibitors have shown efficacy in targeting this protein and preventing migraine attacks[7]
- There are currently four medications in this class that have been approved by the FDA for preventing migraine headaches[8]

Medication (CGRP-inhibitor)	Frequency	Mode of Administration
Aimovig	Every 4 weeks	Subcutaneously
Ajovy	Every 4 or 12 weeks	Subcutaneously
Vyepti	Every 12 weeks	Intravenously by healthcare provider
Emgality	Every 4 weeks	Subcutaneously

Background

This study used medical and pharmacy claim information from July 2019 to June 2020 provided by Gallagher Benefits Services. Gallagher is a global benefits consulting agency, which provides claims level information on medical and pharmacy utilization for the beneficiaries they serve. The data is used to drive research and solutions to improve health outcomes and reduce costs for their client organizations. Claims level records housed in a dataset for more than 1,000,000 beneficiaries were transmitted to the Greater Philadelphia Business Coalition on Health and the Jefferson College of Population Health for data analysis.

Methods

- Included those aged 18 to 64 with pharmacy and medical claims
- Excluded those who had any diagnosis for brain tumors or cancer or had any prescriptions for antineoplastic medications
- 3 separate cohorts of beneficiaries:
  - Confirmed Migraine (having a migraine diagnosis)
  - Suspected Migraine (no migraine diagnosis, but met one of the criteria below)
    - Prescription for migraine preventative medications (triptans, ergotamines or CGRPs)
    - At least two medical encounters with a diagnosis of headache greater than 7 days apart
  - No Migraine (no migraine diagnosis)
- All migraine diagnoses were identified using International Classification of Diseases, Ninth or Tenth Revision, Clinical Modification Codes
- Additional clinical characteristics studied were the two most common comorbidities for this cohort of patients, anxiety and depression
- Adherence was calculated for Aimovig, as this was the most common CGRP inhibitor in this cohort of beneficiaries
- We calculated adherence using proportions of days covered (PDC) for the time frame that a patient was on the medication; the initial start date was any time within the study period (index date)
- Patients who discontinued the medication (off of medication for more than 90 days) for any reason had an adjusted end date
- All variables were analyzed descriptively with categorical data being reported as numbers and percentages and continuous data being reported in means and standard deviations.
- Chi-square significance testing was used to assess differences in prevalence of comorbidities between the three cohorts of interest
- An alpha level of 0.05 was established for all significance testing
- All analyses were carried out using SAS version 9.4 (SAS Institute, Cary, NC)

Results

Table 1. CGRP-inhibitor Utilization by Demographics (Age & Sex)

CGRP inhibitor Utilization by Demographics	(Confirmed + Suspected Migraine) (Percent, N)	Statistics, ChiSq
Age Groups		532.32, DF=12, p<0.0001
18-29	5.57%, (183/3,286)	
30-39	6.70%, (548/8,183)	
40-49	11.58%, (882/7,614)	
50-59	7.42%, (565/7,614)	
60-64	7.11%, (150/2,109)	
Sex		82.46, DF=3, p<0.0001
Male	5.49%, (305/5,558)	
Female	7.90%, (2023/25,603)	
Total CGRP utilization	7.47%, (2,328/31,161)	

- Most (82.2%) migraineurs were female
- Out of 31,161 migraineurs, 2,328 (7.47%) were prescribed a CGRP inhibitor, with a higher percentage of females amongst the migraineur group (2,023 of 25,603 or 7.90%) being prescribed CGRP-inhibitors in comparison to males (305 of 5,558 or 5.49%)
- The 40-49 year age group had the highest proportion of members prescribed CGRP-inhibitors (882 of 7,614 or 11.58%), while the 18-29 age group had less than half the proportion as those in the 40-49 age group.
- Those with confirmed migraine had higher mean numbers of outpatient and emergency department (ED) visits in comparison to those with suspected migraine, irrespective of CGRP inhibitor use
- The average length on therapy for these patients was slightly over 6 months (188 days), with no statistically significant difference between the confirmed and suspected migraine groups

Table 2. Anxiety and Depression comorbidities by Migraine Status

Comorbidities	Confirmed Migraine (CGRP inhibitors)	Confirmed Migraine (without CGRP)	Suspected Migraine (CGRP inhibitors)	Suspected Migraine (without CGRP)	Total	Statistics, ChiSq
Anxiety	23.48%, (426)	19.68%, (3246)	15.56%, (80)	15.30%, (1888)	N=5,640	130.89, DF=3, p<0.0001
Depression	12.90%, (234)	9.63%, (1588)	8.75%, (45)	7.71%, (951)	N=2,818	66.55, DF=3, p<0.0001

Table 3. Outpatient and Emergency Department Service Utilization by Migraine Status

	Confirmed Migraine (CGRP inhibitors)	Confirmed Migraine (without CGRP)	Suspected Migraine (CGRP inhibitors)	Suspected Migraine (without CGRP)	Total	Statistics
Number of Outpatient Visits	11.19, (1,814)	8.18, (16,492)	7.16, (514)	6.24, (12,341)	N=31,161	F=338.96, DF=3, p<0.0001
Number of Emergency Department Visits	1.10, (1,814)	1.08, (16,492)	0.71, (514)	0.52, (12,341)	N=31,161	F=103.98, DF=3, p<0.0001

Table 4. Aimovig Adherence by Age and Sex

By Age	Aimovig Adherence ≤80% (corrected)	Aimovig Adherence >80% (corrected)	Statistics, ChiSq
18-29	12.07% (N=7)	87.93% (N=51)	1.5695, DF=4, p= 0.8143
30-39	17.37% (N=37)	82.63% (N=176)	
40-49	14.52% (N=45)	85.48% (N=265)	
50-59	14.16% (N=31)	85.84% (N=188)	
60-64	16.18% (N=11)	83.82% (N=57)	
Total			
By Sex			0.0603, DF=1, p=0.8060
Male	15.89%, (N=17)	84.11% (N=90)	
Female	14.98% (N=114)	85.02% (N=647)	
Total	N=131	N=737	

Discussion

- Results of our analysis confirm that migraine is likely a significantly under-diagnosed disease even when attempting to capture those without a diagnosis, but having criteria for being suspected of having migraine
- It is important to understand that this employer-based population may be healthier than the general population, however, this research still allows employers to understand the population and general principles when developing care plans for their beneficiaries
- Only 2.88% of our population was identified in either the confirmed or suspected migraine category, far below the prevalence identified in current literature
- Aimovig, injected subcutaneously every 28 days, has the highest utilization amongst its class
- Addressing migraine with an employee population may serve as an upstream strategy to improving care and productivity loss associated with the disease state
- Limitations include those associated with claims data including the lack of control for potential confounding variables, which may prevent true reflections of adherence rates and utilization of CGRP-inhibitors in this specific cohort of migraine beneficiaries
- Other limitations include inaccurate and missing specific billing codes for certain disease states, however, good judgement was used when designing this study

Conclusions

- This is one of the first studies examining CGRP-inhibitor utilization in a commercially insured migraine population
- The prevalence of migraine within this employer-insured population is likely understated when comparing prevalence data from our study to that in current literature
- Prevalence of common comorbid conditions is likely to be equal or much greater among those with migraine versus those without migraine
- Adherence rates associated with utilization of CGRP-inhibitors can contribute to significant increases in costs from an employer perspective
- Longer term studies are needed to examine CGRP-inhibitor impact on health and cost outcomes

Disclosure

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