### Introduction

Primary headaches, a common neurological condition, often presents with a variety of additional functional disorders. These may include asthma, psychiatric disorders, sleep disorders, pain, and irritable bowel syndrome.2,4

- Primary headache patients utilize a seemingly disproportionate amount of health care resources.
- Improvement of primary headache and associated comorbidities may improve disease diagnosis and treatment strategies, increasing quality of life and efficiency of care.1

### Objective

Calculate the prevalence and mean annual health care cost of patients diagnosed with primary headache conditions and understand the impact of associated comorbidities on these costs.

### Methods

#### Data Source

- Data were drawn from 20,734,344 adult patients (18-65 years) with records during the period from January 1, 2011 to December 31, 2011 in the Truven Health Analytics MarketScan Commercial and Medicare Supplemental Databases.
- The MarketScan Commercial and Medicare Supplemental Databases contain administrative claims and enrollment records for approximately 80 million unique individuals covered by large self-insured employers. Data are fully de-identified and compliant with the Health Insurance Portability and Accountability Act of 1996 (HIPAA).

#### Sample Selection

- Two samples were selected for this study:
  - Functional disorders sample: Patients were selected if they were between 18 and 65 years old during the 2011 calendar year; had 12 months continuous enrollment during the calendar year; and had at least one medical claim for a functional disorder (ICD-9 diagnosis during the calendar year. Functional disorders were primary headache, asthma/allergy, psychiatric disorders, gastric-motility disorders, tinnitus, sleep disorders, and widespread chronic pain disorders.
  - Control sample: Patients were selected if they were between 18 and 65 years old during the calendar year, had 12 months continuous enrollment during the calendar year, and did not have a medical claim for a functional disorder diagnosis during the calendar year.

#### Cohort Selection

- Primary headache cohort. The functional disorders patients were stratified into a primary headache cohort. The primary headache cohort was further stratified into seven cohorts based on number of comorbid functional disorders (0 to 6).
- Matched cases. The primary headache cohort was matched to healthy controls without functional disorders using age, gender, and region. 

#### Study Measures

- Primary outcomes: Annual total health care costs were examined for the functional disorders cohorts and matched cohorts for each calendar year from 2011 to 2013.
- Demographics: Gender was assessed on the date of the first medical claim with a functional disorder diagnosis within the calendar year.

#### Statistical Analyses

- Prevalence was calculated for patients diagnosed with primary headache and other functional disorders.
- Descriptive analyses of demographics and annual total health care costs for patients diagnosed with primary headache, primary headache with comorbid functional disorders, and control patients were calculated.
- Each functional disorder cohort was matched to controls using age group, gender, and region. Matching was performed up to 20:1 individuals were sampled randomly with replacement as to avoid any bias.
- Statistical significance was tested for demographic and cost variables between functional disorder cohorts and control cohorts.
- To examine whether there was a statistically significant difference between demographic variables and functional disorder status, a X^2 test was used. A Wilcoxon sign-rank test was used to examine a statistically significant difference between cost variables and functional disorder status. A Wilcoxon signed-rank test was used to adjust for the smallest unit of cost data. Statistical significance was defined as p-value < 0.05.
- Costs were adjusted using the annual medical care component of the Consumer Price Index (CPI) to reflect inflation 2011. 
- Indirect health costs were not captured, as only direct costs based on plan and patient out-of-pocket payment were assessed. Findings may not be generalizable to other patient populations as the study only included a commercially insured population aged 18-65 years.

### Results

- Primary headache was found in 4.37% (N=605,590) of the population. Wide spread chronic pain disorder was the most common functional disorder (18.04%, N=1,325,935), followed by asthma/allergy (10.39%, N=2,154,479) and psychiatric disorder (8.39%, N=1,738,248, Figure 1).
- Both cohorts had a higher proportion of females than males (Table 1).

#### Conclusions

- Patients with primary headache and associated comorbid functional disorders have significantly higher costs than the average patient population.
- In addition to health care costs, the lost work days and decreased quality of life highlight the importance of a considered treatment strategy for primary headache and the commonly associated comorbid functional disorders.

### References


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