

## ABSTRACT

**Objectives**

- 1) Appreciate the most common causes of chronic laryngitis
- 2) Understand the incidence of chronic laryngitis in a primary care population
- 3) Describe the demographic profile of patients who present to care for treatment of chronic laryngitis

**Methods**

We retrospectively identified patients diagnosed with chronic laryngitis among a cohort of patients receiving primary care at an urban academic medical center from 2009-2010 through chart review. Incidence was calculated. A sample of 100 of the subjects was selected at random, and symptoms, first-visit treatment, smoking and demographics recorded.

**Results**

Yearly incidence of newly diagnosed chronic laryngitis was 4.64 per 1000 people. The 100 subjects consisted of 62 women and 38 men. Race was recorded as Black (46), Hispanic (25), White (17), and other (12). Age ranged from 20 to 75, with a mean of 52.6 (standard deviation 12.6) years. Therapies included a proton-pump inhibitor (77%), voice therapy (21%), nasal steroid (15%), anti-histamine (6%), amitriptyline (4%) and no treatment (10%). The most common symptoms reported were hoarseness (59%), cough (37%), pain/soreness (37%), globus (36%), excessive throat clearing (31%), subjective dysphagia (26%), and throat irritation (19%). 92% were seen by an otolaryngologist.

**Conclusion**

We found a yearly chronic laryngitis incidence of 4.64 per 1000 people. Most presented to Otolaryngologists. The majority was treated using proton pump inhibitors. Hoarseness, cough and pain were the most common symptoms. Population surveys are needed to define symptom and undiagnosed disease prevalence.

## CONTACT

Pieter Noordzij, MD  
Email: [pieter.noordzij@bmc.org](mailto:pieter.noordzij@bmc.org)

## INTRODUCTION

Chronic laryngitis is considered a common condition, and is seen by both primary care practitioners and otolaryngologists. Causes are varied, and can include reflux-related, infectious, functional (muscle tension), polyp/misuse, neurologic and neoplastic. In contrast to acute laryngitis, chronic laryngitis (CL) is defined as symptoms lasting greater than three weeks.<sup>1</sup> Relative frequency of laryngeal pathologies has been previously described, such as the 2001 work by Coyle.<sup>2</sup> However, to our knowledge, the overall incidence of CL has never been determined. Our goal was to define the number of new cases per year in our population of primary care patients at an academic urban safety-net hospital. Secondly, we set out to record the presenting symptoms of patients with chronic laryngitis, their demographic background, and the most common first line interventions used by the healthcare providers (primarily otolaryngologists) making the initial diagnosis.

## METHODS

This was an IRB-approved retrospective cross-sectional study using existing EMR data. We defined our primary care population as all patients over 18 years old who saw a primary care provider (MD/NP in a primary care internal medicine or family medicine clinic).

To capture patients with a potential diagnosis of chronic laryngitis, we began by searching the EMR for all patients with one of the following added to the problem list by a healthcare provider:

- o ICD-9 code 476.0 (chronic laryngitis)
- o ICD-9 code 464.0 (acute laryngitis) with otolaryngologist visit within 3 months
- o Other throat discomfort/pain (ICD-9 784.x)

Patients meeting these criteria were added to a list of medical record numbers was obtained from the BMC clinical data warehouse.

To determine the percentage that had chronic laryngitis as an established diagnosis (vs. acute laryngitis, etc.), we chose a random sample of each of the ICD-9 codes for further chart review. The visit where the problem was added and at least one follow-up were read. The subjects was considered to have CL if he/she had documented laryngeal symptoms for greater than three weeks or a diagnosis of CL in the chart. These percentages were then used in calculating the total number of new cases of CL in 2009-2010 (figure 1).

Separately, we selected 100 subjects for comprehensive chart review and recorded demographics, smoking history, symptoms and interventions. Data was recorded and summarized in Microsoft Excel.

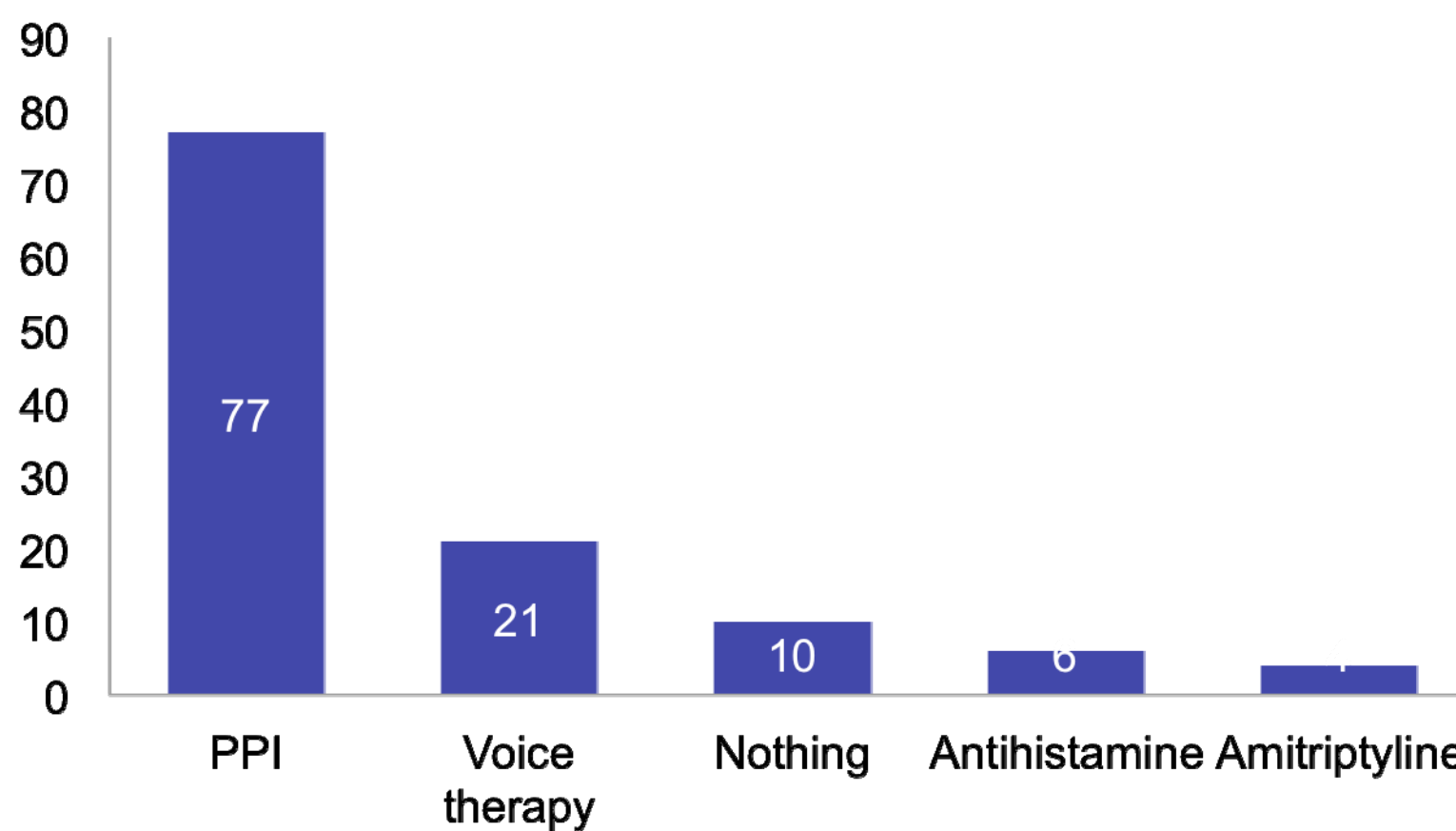
## RESULTS

There were a total of 375 subjects estimated new cases in the primary care population at BMC between 2009 and 2010 (figure 1). Our total primary care population was 40317. This correspond with 187.5 cases, or 4.64 diagnoses per 1000 people per year. This is equivalent to approximately 1.5 million cases in the U.S. per year.

The average age at diagnosis was 52.6 years old, with a population consisting of 62% women and 38% men. The average primary care population age was 50.15, consisting of 52% women and 48% men. Race is detailed in figure 4. Smoking was recorded as 22% current/still smoking, 9% past/history of smoking, and 69% never smoked. Most subjects had multiple symptoms, with dysphonia was most common presenting complaint (figure 3). In the initial visit, proton pump inhibitors were most commonly prescribed, followed by voice therapy. 10% of subjects received no intervention/counseling alone (figure 2). 92% were seen by an otolaryngologist.

Category	Initial n	% Chronic	Total
Chronic laryngitis (476.0)	291	84%	244
Acute laryngitis with oto visit (464.0)	24	100%	24
Other throat discomfort/pain (784.X)	320	33%	107
Total			375

**Figure 1.** Subjects and initial complaints included in counts, and percentage estimated to have chronic laryngitis



**Figure 2.** Most common therapies provided at first visit

## DISCUSSION

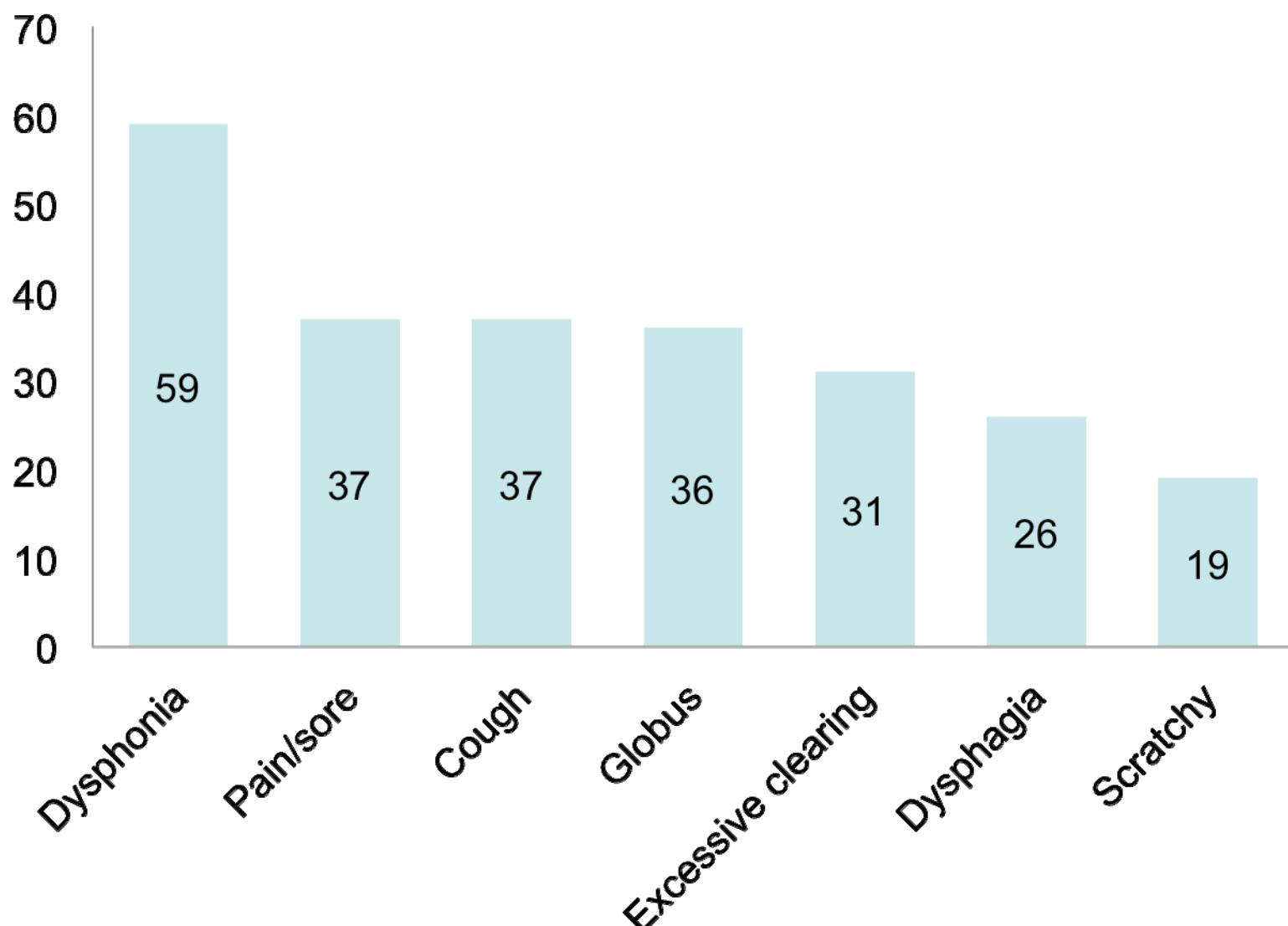
There are no previous estimates of the incidence of chronic laryngitis for comparison. This work provides a guide for future investigators and policymakers. Given the current estimate of 8,600 otolaryngologists in the U.S. in total,<sup>3</sup> our data indicate approximately 170 cases per otolaryngologist per year.

There are multiple limitations to this study:

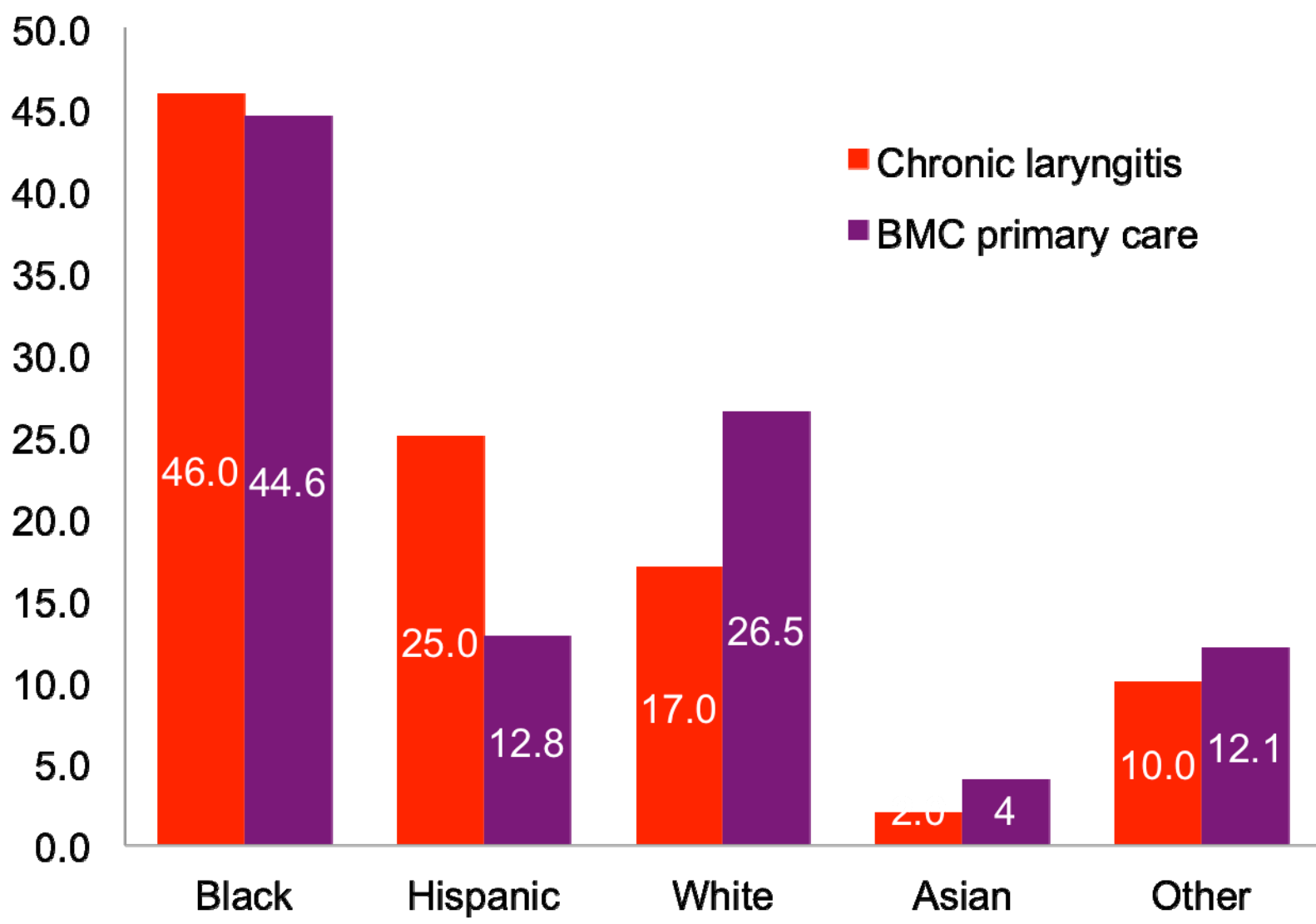
- We captured only those who had complaints and presented to care
- Not all providers add problems to the list consistently
- Other ICD-9 codes or free-text entries may have been missed
- Our population is mostly lower socioeconomic status urban

Given these limitations, it is likely that our electronic search parameters missed patients in our primary care population who presented with chronic laryngitis. Furthermore, it is reasonable to postulate that there are a significant number of individuals who were symptomatic but never presented to care. Therefore, it is likely that our measurements biases towards an underestimate. Future studies could collect data prospectively and use survey techniques to address these issues.

In addition, we do not define prevalence, which would provide information about the average duration of disease. This would be best addressed with a comprehensive survey that would follow subjects for the duration of their disease.



**Figure 3.** Presenting symptoms, most to least common (most subjects had multiple complaints)



**Figure 4.** Racial breakdown for chronic laryngitis and BMC primary care population overall

## CONCLUSIONS

- Chronic laryngitis had an incidence of 4.64 new cases per 1000 people annually
- Translates to 1.5 million new cases in the U.S. per year, with 170 per practicing otolaryngologist.
- Likely significant financial implications based on direct care cost and lost earnings
- Further research is needed to define population-wide effects
- Collaboration with primary care providers should be explored to best utilize resources, given possibly insufficient number of otolaryngologists available to see all cases.

## REFERENCES

- (1) Shah, R. Acute Laryngitis. *Medscape Reference*. Ed: Meyers, A. WebMD, LLC; July 2011. <http://emedicine.medscape.com/article/864671>
- (2) Coyle, S, Weinrich, B, Stemple, J. Shifts in Relative Prevalence of Laryngeal Pathology in a Treatment-Seeking Population. *Journal of Voice*. 2001; 15(3):424-440
- (3) Kim, J, Cooper, R, Kennedy, D. Otolaryngology—Head and Neck Surgery Physician Work Force Issues : An Analysis for Future Specialty Planning. *Otolaryngology—Head and Neck Surgery*. 2012; 146(2):192-202