Primary care providers have a crucial role in the diagnosis and treatment of voice disorders. With a lifetime prevalence of approximately 30%,1,2 voice disorders are a considerable burden on the health care system. Primary care providers are often responsible for the initial management of these patients. Current approaches to the diagnosis and subsequent management of specific voice disorders by primary care physicians (PCPs) must be understood to create recommendations and guidelines for optimal treatment.

Of the potential causative factors to be considered in a patient with dysphonia, laryngopharyngeal reflux (LPR) is particularly vexing because of its lack of association with typical gastroesophageal reflux symptoms. No consensus exists among physicians regarding the diagnosis and treatment of LPR.3 For instance, in cases where LPR is suspected, empirical therapy with proton pump inhibitors has been recommended to confirm the diagnosis; however, guidelines suggest that this class of drug should not be prescribed to patients who lack recent signs and symptoms of gastroesophageal reflux disease (GERD).4,5 Empirical treatment could prevent unnecessary referrals; however, it could also delay treatment for more serious causes of dysphonia such as laryngeal cancer. The objective of this study was to examine how PCPs manage patients with prolonged hoarseness of unclear origin. We hypothesize...
that the primary care community may emphasize empirical treatment for reflux over potential evaluative methods or treatments in patients seen with dysphonia, even when other symptoms of reflux may be absent.

Methods

Survey Design

The institutional review board at the New York University School of Medicine approved the present web-based, anonymous, deidentified survey. A 16-question survey was designed based on a literature review and clinical consensus (eFigure in the Supplement). Specific questions were designed to address current practices related to the clinical practice guidelines on hoarseness, as well as previous surveys addressing dysphonia. Section 1 (questions 1-5) addressed physician willingness to empirically treat dysphonia of longer than 6 weeks, physician referral patterns, and empirical treatment choices. Section 2 (questions 6-10) specifically addressed the role of reflux in dysphonia, including the role for empirical treatment and subsequent evidence for dysphonia resolution after antireflux treatment. Section 3 (question 11) asked whether physicians had reviewed clinical practice guidelines in the literature pertaining to dysphonia. Section 4 (questions 12-16) included demographic questions such as geographic area, type of specialty, and years of clinical practice.

Survey Distribution

The survey was distributed via e-mail to family medicine physicians and general internists. These PCPs were chosen based on their academic affiliation with institutions across the United States. Academic departments that were contacted via e-mail were chosen at random, although an effort was made to distribute e-mails geographically according to predetermined US regions as outlined in the eFigure in the Supplement.

Data Accrual and Statistical Analysis

All data were collected via an online data management system between February 5 and April 29, 2013. The survey link was first distributed via e-mail to family practitioners and then to general internists in the same fashion. One initial e-mail was sent to potential respondents, followed by a reminder e-mail approximately 3 weeks later. Each physician group was then given an additional 3 weeks to complete the survey before the questionnaire was closed. Survey data were analyzed using the 1-sample z test to determine individual question significance and using Pearson product moment correlation $r^2$ test to evaluate for response trends between physician groups.

Results

Respondent Profile

Of 2441 physicians who received the e-mail broadcast, 339 (13.9%) started the survey, and 314 (12.9%) completed the survey. Among those who completed the survey, 46.3% were family practitioners, 46.5% were trained in internal medicine (responded as general practitioner, general practitioner/hospitalist, or hospitalist), and 7.2% identified as specialists. Across all specialties, most physicians (84.7%) worked in an academic setting. The mean time in practice since completion of residency was 15.9 years. Physicians responded from all over the country in a uniform distribution across 9 regions in the United States (Table).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice location, %</td>
<td></td>
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<tr>
<td>Division 2 (Mid-Atlantic): New York, Pennsylvania, New Jersey</td>
<td>20.7</td>
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<tr>
<td>Division 3 (East North Central): Wisconsin, Michigan, Illinois, Indiana, Ohio</td>
<td>18.2</td>
</tr>
<tr>
<td>Division 4 (West North Central): Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa</td>
<td>16.9</td>
</tr>
<tr>
<td>Division 5 (South Atlantic): Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida</td>
<td>8.6</td>
</tr>
<tr>
<td>Division 6 (East South Central): Kentucky, Tennessee, Mississippi, Alabama</td>
<td>5.7</td>
</tr>
<tr>
<td>Division 7 (West South Central): Oklahoma, Texas, Arkansas, Louisiana</td>
<td>2.2</td>
</tr>
<tr>
<td>Division 8 (Mountain): Idaho, Montana, Wyoming, Nevada, Utah, Colorado</td>
<td>8.0</td>
</tr>
<tr>
<td>Division 9 (Pacific): Alaska, Washington, Oregon, California, Hawaii</td>
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<tr>
<td>Practice setting, %</td>
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<td>Academic</td>
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<td>Practice type, %</td>
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<tr>
<td>Specialist</td>
<td>7.2</td>
</tr>
<tr>
<td>Time since completion of training, y</td>
<td>15.9</td>
</tr>
</tbody>
</table>

Treatment vs Referral

Physician respondents were asked whether or not they would treat or immediately refer a patient with chronic hoarseness (symptoms persisting for >6 weeks) of unclear origin. In this cohort, 64.0% of all respondents preferred to treat. Of those physicians who decided to initially treat patients with chronic hoarseness, 16.6% would treat for longer than 4 weeks before referral, 51.2% would treat for 3 to 4 weeks before referral, 30.4% would treat for 1 to 2 weeks before referral, and 1.4% would treat for less than 1 week before referral; 36.0% of physicians referred patients immediately. Almost all physician respondents (99.4%) would refer to an otolaryngologist at some point, independent of their decision to treat or refer.

Medication Choice for Empirical Treatment

When asked what medications physicians prescribe routinely for patients with chronic hoarseness of unknown ori-
gin, reflux medication (85.8%) and antihistamines (54.2%) were most commonly selected. Across all respondents, 41.0% reported prescribing both reflux medication and antihistamines routinely. The most common other response was nasal corticosteroids. Approximately 15% of responding physicians reported that they do not routinely prescribe medications for patients with chronic hoarseness. Responses among physicians followed the same trend when selecting a preferential therapy (Figure 1). No statistically significant difference was observed in the prescription of reflux medication between physician groups (P = .48).

**Reflex and Its Contribution to Hoarseness**
Across all respondents, 61.3% reported that reflux was “sometimes” involved in the manifestation of hoarseness, and 27.0% believed that reflux was involved “most of the time” (Figure 2A). In total, 55.7% thought that “some” of their patients improved with antireflux treatment, while 11.0% of physicians perceived that most of their patients improved. When queried whether reflux medication led to complete resolution of symptoms, 56.6% believed that “some” of their patients completely resolved, while only 9.4% of physicians thought that “most” of their patients completely resolved (Figure 2B). Of those respondents who reported complete resolution of hoarseness with prescription of reflux medication, 57.6% reported that at least 3 weeks of therapy was necessary to achieve these results.

**Treatment Without Evidence of GERD**
When physicians were asked whether or not they would treat chronic hoarseness with reflux medication in a patient without symptoms consistent with GERD, 79.2% reported the affirmative (data not shown). This decision to treat reflux was statistically significant across all physician specialties (P < .001).

**Physician Experience With Treating Dysphonia**
Of the respondents, 74.2% treated fewer than 2 patients with hoarseness per month, 9.9% treated 3 to 5, 0.6% treated 6 to 10, and 1.3% treated more than 10; 14.0% of respondents treated no patients with hoarseness per month. In addition, 72.3% had not reviewed any clinical practice guidelines regarding the evaluation and management of patients with hoarseness.

**Discussion**
Empirical treatment of long-standing hoarseness by PCPs before visualization of the larynx is a potentially concerning is-
sue for otolaryngologists. In previous investigations, presumptive diagnoses made by general practitioners based on patient history were incongruent with final diagnoses made by otolaryngologists on laryngoscopic examination. In the case of laryngeal carcinoma, evidence has shown that physician delay in diagnosis is a prognostic indicator associated with increased morbidity and more advanced disease. Therefore, incorrect empirical treatment by PCPs could delay necessary interventions for more serious laryngeal pathologic conditions.

In the present study, 64.0% of physicians chose to empirically treat a patient with hoarseness of unknown origin lasting longer than 6 weeks, with a treatment regimen lasting up to 4 weeks. Although no evidence in the literature supports a precise duration to referral, most recommendations suggest referral after 2 weeks of persistent symptoms. In contrast to our results, Turley and Cohen reported that approximately two-thirds of PCPs elect to refer patients with dysphonia lasting more than 2 weeks. Given the differences in question design between the study by Turley and Cohen and the present data, it is difficult to determine exactly how long PCPs would wait before referral. However, it is reasonable to assume from the data presented herein that many PCPs are willing to attempt empirical treatment before a specialist has had the opportunity to visualize the larynx, despite the persistence of symptoms exceeding 6 weeks. Furthermore, 72.3% of physicians who responded reported never having read guidelines concerning the management of hoarseness. Although it would be difficult to draw any broad conclusions about national PCP practices from this survey, it is of concern that a substantial number of academic PCPs would choose to monitor and treat patients with dysphonia for extended periods without visualization of the larynx and without any guideline-based treatment regimen.

In our physician cohort, it is clear that most consider LPR a common cause of dysphonia of unclear origin and treat patients accordingly. Many of the symptoms associated with LPR such as dysphonia, throat clearing, and globus pharyngeus are nonspecific. In addition, LPR is difficult to diagnose even with visualization of the larynx. Recent evidence from our group has highlighted that patients with hoarseness who have been diagnosed as having LPR by PCPs and even general otolaryngologists and are subsequently referred to a specialty laryngology clinic often have significant missed pathologic conditions. Concern is growing that physicians may be overemphasizing the role of LPR as causative of dysphonia.

Possibly the most notable finding in this study was that 79.2% of respondents would empirically treat patients having dysphonia without evidence of concurrent GERD, a practice that is not supported by clinical practice guidelines. Furthermore, 85.8% of respondents prescribed reflux medication, yet only 9.4% found that this therapy provided complete resolution of symptoms. No conclusive evidence exists that proton pump inhibitor therapy is effective for LPR. Reviews of the literature have pointed to a substantial placebo effect in treatment trials for patients with LPR. A 2006 Cochrane review identified 6 randomized controlled trials that evaluated proton pump inhibitor therapy for LPR; all 6 studies reported a significant placebo response, and none met full criteria to determine treatment effectiveness. After the Cochrane review, the most recent randomized trial (by Vaezi et al) also showed no statistical difference between the use of esomeprazole and placebo in patients with chronic posterior laryngitis. Because little evidence supports the treatment of LPR without the symptoms of GERD or without a laryngoscopic evaluation, these data suggest some level of disconnect in treatment strategies between the otolaryngology and primary care communities. However, published primary care literature advocates for a protocol-based approach to dysphonia management and calls for antireflux treatment only in the presence of GERD. Therefore, it is clear that PCPs and otolaryngologists should be more vocal about a systematic approach to antireflux treatment in the setting of dysphonia within the primary care population. Previous efforts have informed the primary care community about the proper management of vocal disorders; however, it is clear that future communication between specialties, on a regional or national level, is still necessary.

Our data show infrequent use of antibiotic therapy. The 2009 clinical practice guideline included a strong recommendation against antibiotic use for patients with dysphonia and a Cochrane review showed minimal benefit for antibiotic therapy in patients with chronic laryngitis. In addition, an ever-present concern among physicians is the increasing rate of antibiotic-resistant bacteria; it is reassuring that most PCPs do not consider antibiotics an appropriate empirical treatment option for patients with dysphonia.

The present study is not without limitations. As with all questionnaire-based studies, respondents may have misinterpreted questions. Physicians were asked to make concrete choices about patient treatment options with limited information about patient history. As such, it is possible that the respondents were forced into certain response choices because of the context of the question. This point is of particular concern when trying to apply any broad conclusions about PCP practice from this study sample alone. In addition, this study could be subject to selection bias; some physicians may have been more likely to participate because of their familiarity with voice issues. However, the demographic distribution of the respondents at least indicates that respondents have diverse training backgrounds and patient demographics.

Conclusions

Primary care physicians who responded to our survey preferred to treat patients with chronic hoarseness (>6 weeks) of unknown origin rather than refer immediately. These physician respondents treated hoarseness most commonly with reflux medication. In addition, they reported that they would treat hoarseness of unknown origin with antireflux treatment when symptoms of GERD were not present. These data indicate that PCPs strongly consider reflux a common cause of dysphonia, and many physicians may also believe that empirical treatment with reflux medication is indicated before referral.
ARTICLE INFORMATION

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Author Contributions: Mr Ruiz and Dr Branski had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of data analysis.

Study concept and design: All authors.

Acquisition of data: Ruiz, Jeswani, Andrews.

Analysis and interpretation of data: All authors.

Drafting of the manuscript: Ruiz, Branski.

Critical revision of the manuscript for important intellectual content: All authors.

Statistical analysis: Ruiz, Branski.

Administrative, technical, or material support: Ruiz, Jeswani, Andrews, Rafii, Paul.

Conflict of Interest Disclosures: None reported.

REFERENCES


