

Delayed Otolaryngology Referral for Voice Disorders Increases Health Care Costs



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ABSTRACT

BACKGROUND: Despite the accepted role of laryngoscopy in assessing patients with laryngeal/voice disorders, controversy surrounds its timing. This study sought to determine how increased time from first primary care to first otolaryngology outpatient visit affected the health care costs of patients with laryngeal/voice disorders.

METHODS: Retrospective analysis of a large, national administrative claims database was performed. Patients had an International Classification of Diseases, 9th Revision-coded diagnosis of a laryngeal/voice disorder; initially saw a primary care physician and, subsequently, an otolaryngologist as outpatients; and provided 6 months of follow-up data after the first otolaryngology evaluation. The outpatient health care costs accrued from the first primary care outpatient visit through the 6 months after the first otolaryngology outpatient visit were determined.

RESULTS: There were 260,095 unique patients who saw a primary care physician as an outpatient for a laryngeal/voice disorder, with 8999 (3.5%) subsequently seeing an otolaryngologist and with 6 months postotolaryngology follow-up data. A generalized linear regression model revealed that, compared with patients who saw an otolaryngologist ≤ 1 month after the first primary care visit, patients in the >1 -month and ≤ 3 -months and >3 -months time periods had relative mean cost increases of \$271.34 (95% confidence interval \$115.95-\$426.73) and \$711.38 (95% confidence interval \$428.43-\$993.34), respectively.

CONCLUSIONS: Increased time from first primary care to first otolaryngology evaluation is associated with increased outpatient health care costs. Earlier otolaryngology examination may reduce health care expenditures in the evaluation and management of patients with laryngeal/voice disorders.

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As many otolaryngologic disorders are evaluated initially by primary care physicians, decisions for otolaryngology referral may have important implications for the health care system. From 1999 to 2009, among primary care visits,

ear/nose/throat complaints grew from 4.5% to 8.5%, with a corresponding increase in otolaryngology referral rates from 3.8% to 7.5%.¹ With otolaryngologists being the third most common specialty to which family medicine physicians

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referred patients, over- or under-referral may affect health care costs.²

Laryngeal/voice disorders represent a unique group of disease states common to primary care physicians and otolaryngologists, with a point prevalence of 1 in 13 among primary care patients.^{3,4} Laryngeal/voice disorders are associated with negative quality-of-life impact, direct health care cost estimates approaching \$5 billion annually, and additional indirect costs from voice-related work absenteeism and short-term disability claims.⁵⁻⁷ The diagnosis and treatment of the specific laryngeal/voice disorder relies on visual examination of the larynx, the absence of which is associated with extremely poor diagnostic accuracy.⁸ Delaying referral or not referring to a specialist trained in laryngoscopy (ie, an otolaryngologist) could lead to delayed diagnosis, inappropriate treatment, and progression of disease with adverse effects on patient outcomes and health care costs.

Yet, controversy surrounds the *timing* of laryngoscopy with recommendations for laryngoscopy in cases of dysphonia of 2 weeks duration and a recent clinical practice guideline extending the need for laryngoscopy or referral for laryngoscopy to a maximum of 3 months in patients with persistent hoarseness/dysphonia.⁹⁻¹¹ This guideline statement has been subsequently criticized due to the potential impact of delayed otolaryngology evaluation with resulting harmful consequences and a lack of objective evidence regarding the recommended timing of laryngoscopic evaluation.¹²

Thus, a need exists to examine the impact of the timing of otolaryngology evaluation in patients with laryngeal/voice disorders. One approach to addressing this issue is to use a large national administrative claims database (eg, MarketScan) to assess the health care costs associated with early vs late evaluation by otolaryngology. The purpose of this study is to examine how the time from first primary care to first outpatient otolaryngology visit (≤ 1 month, > 1 to ≤ 3 months, and > 3 months) affects the outpatient costs incurred during the evaluation and treatment of laryngeal/voice disorders. Our hypothesis is that early evaluation, the ≤ 1 -month group, will be associated with the lowest costs.

METHODS

This study was approved by the Duke University Medical Center Institutional Review Board. The MarketScan Commercial Claims and Encounters dataset and Medicare Supplemental and Coordination of Benefits dataset, a

large, national administrative US claims database, was retrospectively analyzed for January 1, 2004 to December 31, 2008. The MarketScan databases (Truven Health Analytics, Ann Arbor, MI) contained the annual health care claims of approximately 55 million individuals during this time period, including employees < 65 years of age, Medicare beneficiaries ≥ 65 years of age, and their dependents integrated from all care providers and linked to health care utilization and cost records at the patient level.⁴

Patients with a primary or nonprimary diagnosis of at least one of the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) codes (Table 1), seen initially by a primary care physician and subsequently an otolaryngologist, both as outpatients, from January 1, 2004 to December 31, 2008 were included. Because patients with a brainstem stroke may have a disordered voice from nucleus ambiguous involvement, codes 438.10 and 438.19 (late effects of cerebrovascular disease) were

included. To have sufficient cost data and allow time for multiple evaluation and treatment trials after the otolaryngology evaluation, patients had to have at least 6 months follow-up after the initial outpatient otolaryngology encounter. Patients who did not initially see a primary care physician and subsequently an otolaryngologist as an outpatient for a laryngeal/voice disorder, and with < 6 months postotolaryngologist follow-up, were excluded. Outpatient visits were determined from Evaluation and Management (E & M) Current Procedural Terminology (CPT) and internal MarketScan codes and were divided into self-referral (first otolaryngology E & M CPT codes of 99201, 99202, 99203, 99204, 99205, and internal MarketScan codes) and primary care referred (first otolaryngology E & M codes of 99241, 99242, 99243, 99244, 99245, and internal MarketScan codes).

Age, sex, geographic region (divided into 4 census regions: northeast, north central, south, and west), comorbid conditions, and urban vs rural status (based on employment in a metropolitan statistical area), and time to otolaryngologist (the time from the first outpatient primary care to the first outpatient otolaryngology encounter) were collected. *Primary care physicians* were classified as urgent care, medical doctor (not elsewhere classified), osteopathic medicine, internal medicine, multispecialty group, emergency medicine, hospitalist, family practice, geriatric medicine, preventive medicine, pediatrician, nurse practitioner, or physician assistant; *otolaryngologists* were classified as otolaryngology, pediatric otolaryngology, or head & neck

CLINICAL SIGNIFICANCE

- Primary care to otolaryngology evaluation for laryngeal/voice disorders was studied.
- Three referral time groups were examined: ≤ 1 month, > 1 and ≤ 3 months, > 3 months.
- Outpatient treatment costs were tabulated for each referral time group.
- Primary care to otolaryngology evaluation of ≤ 1 month was associated with lowest costs.
- Incremental higher costs occurred with delayed otolaryngology evaluation times.

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