Industry Ties in Otolaryngology: Initial Insights from the Physician Payment Sunshine Act

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Abstract

Objective. To characterize nonresearch payments made by industry to otolaryngologists in order to explore how the potential for conflicts of interests varies among otolaryngologists and compares between otolaryngologists and other surgical specialists.

Study Design. Retrospective cross-sectional database analysis.

Setting. Open Payments program database recently released by Centers for Medicare and Medicaid Services.

Subjects. Surgeons nationwide who were identified as receiving nonresearch payment from industry in accordance with the Physician Payment Sunshine Act.

Methods. The proportion of otolaryngologists receiving payment, the mean payment per otolaryngologist, and the standard deviation thereof were determined using the Open Payments database and compared to other surgical specialties. Otolaryngologists were further compared by specialization, census region, sponsor, and payment amount.

Results. Less than half of otolaryngologists (48.1%) were reported as receiving payments over the study period, the second smallest proportion among surgical specialties. Otolaryngologists received the lowest mean payment per compensated individual ($573) compared to other surgical specialties. Although otolaryngology had the smallest variance in payment among surgical specialties (SD, $2806), the distribution was skewed by top earners; the top 10% of earners accounted for 87% ($2,199,254) of all payment to otolaryngologists. Otolaryngologists in the West census region were less likely to receive payments (38.6%, P < .001).

Conclusion. Over the study period, otolaryngologists appeared to have more limited financial ties with industry compared to other surgeons, though variation exists within otolaryngology. Further refinement of the Open Payments database is needed to explore differences between otolaryngologists and leverage payment information as a tool for self-regulation.

Keywords

otolaryngology, conflict of interest, Sunshine Act, Open Payments

Introduction

Significant financial ties exist between health care providers and the manufacturers of pharmaceuticals and medical devices. In a national survey of physicians, 94% of respondents reported receiving benefits from drug, device, or other medically related companies over the past year, including drug samples, gifts (eg, food for the workplace), reimbursement for professional activities, and consulting fees.¹ This phenomenon is due in large part to a deliberate effort by industry to cultivate relationships with health care providers, with 90% of the $30 billion spent on product promotion by pharmaceutical corporations each year earmarked toward prescribing clinicians.² While professional relationships between providers and industry can serve as an important source of innovation in the advancement of science and patient care,³ there are concerns that the receipt of financial benefits may bias providers toward the interests of industry in both their interpretation of research findings and clinical practice.⁴⁷ With these concerns in mind, the Physician Payment Sunshine Act (Sunshine Act) was enacted in 2010 as part of the Affordable Care Act in order to bring greater transparency to the financial relationships between industry and providers.⁸

Although the potential for financial conflicts of interest (COIs) exists within a broad spectrum of providers, the issue of COI risk management is of particular importance to surgeons. Previous work surveying physicians across specialties suggests that surgeons regard industry collaborations to be appropriate more often than other providers,⁹ a finding that may reflect the unique interdependence between surgeons and medical device manufacturers in the development and implementation of new technologies.¹⁰¹¹ The close working relationship between many surgeons and device

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manufacturers may also contribute to a more favorable perception of industry-sponsored gifts among surgeons compared to other providers, despite the fact that patients may largely be opposed to their surgeons receiving such gifts. In recent years, the relatively permissive surgical culture of industry relations has drawn criticism and even spurred a federal investigation into alleged kickbacks.

There is limited evidence suggesting that individual surgeons may in fact receive considerable sums from industry each year, though much of this information stems from manufacturer reports of payments made to orthopedists and neurosurgeons. In the field of otolaryngology, the potential for financial conflicts of interest is less well understood. Of the few studies systematically assessing the value of industry payments to individual physicians, none examined otolaryngologists. However, previous work suggests that potential COIs are not uncommon among otolaryngology clinical practice guideline authors and that discrepancies exist within the self-reported disclosures of otolaryngologists. We therefore sought to characterize nonresearch industry payments made to otolaryngologists practicing in the United States using data newly released under the Sunshine Act.

**Methods**

**Data Source**

Under the Sunshine Act, drug and device manufacturers and group purchasing organizations (GPOs) operating in the United States must report all “transfers of value” (ie, exceeding $10 per instance or $100 per annum) made either directly or indirectly to teaching hospitals and licensed physicians. These transfers include cash, non–publicly traded ownership interests, consulting fees, nonaccredited CME program funding, honoraria, food and beverage, gifts, grants, and other research payments. This information is made publicly available by the Centers for Medicare and Medicaid Services (CMS) through the Open Payments program online databases, which were first released on September 30, 2014. Of note, teaching hospitals and physicians may engage in a 45-day review and dispute process with the submitting organization if they believe a payment has been reported inaccurately during which time the recipient is de-identified.

**Data Acquisition and Coding**

All nonresearch industry payment information was downloaded from the CMS Open Payment program General Payments database on October 1, 2014. This data set details all nonresearch payments made to applicable providers and teaching hospitals by manufacturers and GPOs between August 1, 2013 and December 31, 2013. This data set does not include research payments or physician ownership/investment interests, which are reported in separate data sets publicly available through the Open Payments program. We restricted our analysis to the General Payments database out of concern that research payments may be inflated by the value of donated pharmaceuticals and physician ownership/investment interests may be reported without adequate context for interpretation. All payments without an associated provider were excluded from the study, including payments with de-identified recipients following physician dispute and payments not matched to a single physician by the responsible manufacturer or GPO.

The medical specialty and subspecialty of each identified physician in the Open Payments data set was determined using the CMS Healthcare Provider Taxonomy Code assigned to them by sponsoring manufacturers and/or GPOs. Identified physicians were then further classified into 35 specialty groups as defined in the Association of American Medical Colleges (AAMC) 2012 Physician Specialty Data Book.

**Analyses**

We first sought to determine the total nonresearch industry payment made to each of the surgical specialties. This was tabulated by summing all nonresearch industry payments made to providers classified within the following specialties: general surgery, neurosurgery, plastic surgery, ophthalmology, orthopedic surgery, otolaryngology, urology, and vascular surgery. We then calculated the mean payment per physician receiving payment (ie, compensated) within each surgical specialty, as well as the mean payment per active physician practicing in the specialty nationwide (ie, per capita). The number of active physicians in each surgical specialty was determined using AAMC 2013 State Physician Workforce Snapshots, including Puerto Rico. These state-specific snapshots do not specify the number of active physicians in a specialty if there are fewer than 10 in the state; in such select instances, we assumed there to be 5 active physicians in the surgical specialty statewide. For each surgical specialty, we determined the proportion of compensated physicians by dividing the number of compensated physicians over the total number of active physicians. In order to understand the distribution of the nonresearch industry payment received by individual surgeons, we calculated summary statistics and the Gini Index, a measure of statistical dispersion ranging from 0 (perfect equality) to 1 (complete inequality).

We then further examined nonresearch industry payments made within the field of otolaryngology. We first compared otolaryngologists by specialization, calculating the total nonresearch industry payment and mean payment per compensated otolaryngologist for each of the following CMS-defined otolaryngic specializations: facial plastic surgery, otolaryngology/facial plastic surgery, plastic surgery within the head and neck, otolaryngic allergy, otology/neurotology, pediatric otolaryngology, sleep medicine, and otolaryngology (not otherwise specified). Of note, there are currently no CMS Healthcare Provider Taxonomy Codes corresponding to the otolaryngic specializations of head and neck oncology, laryngology, and rhinology. We then compared...
sponsors making nonresearch payments to otolaryngologists, calculating the total nonresearch payment attributable to each sponsor and using product line information on sponsor websites to classify the top 20 highest paying sponsors as manufacturers of pharmaceuticals, devices, or both; no GPOs were identified among the top 20 highest paying sponsors.

We last compared otolaryngologists by geography, calculating the mean payment per compensated otolaryngologist and the proportion of compensated otolaryngologists in each US census region.31 AAMC 2013 State Physician Workforce Snapshots were used to determine the total number of otolaryngologists in each US census region. We performed statistical testing to assess for differences between otolaryngologists in each of the 4 US census regions. The ANOVA test was used to assess for differences in mean payment per compensated otolaryngologist, and the chi-square test was used to assess for differences in the proportion of compensated otolaryngologists.

All statistical analyses were performed using Stata version 13.0 (StataCorp, LP, College Station, Texas, USA). All statistical tests were 2-tailed, and an α level of 0.05 was considered statistically significant.

Results

Between August 1, 2013, and December 31, 2013, 57,173 surgeons were identified as receiving a total of 357,571 transfers of value worth $172,005,314 from drug and device manufacturers and GPOs. Among all surgeons, the mean payment per capita was $1681, with a median payment of $17 (interquartile range [IQR], $0-$146). Among compensated surgeons, the distribution of total payment amounts received by individual surgeons was skewed, with the top 10% of earners accounting for 93.2% ($160,223,429) of the overall value (Figure 1). In contrast to the top earners, the majority of compensated surgeons received less than $450 (Figure 2). The mean payment amount per compensated surgeon ($3009) was almost 25-fold greater than the median ($121; IQR, $39-$391).

Nonresearch Industry Payments to Surgeons by Specialty

Over the study period, at least half of all active physicians were identified as having received nonresearch industry payments in each of the surgical subspecialties (minimum: 45.4%), and almost three-quarters of orthopedists were compensated (71.7%) (Table 1). Roughly half of all otolaryngologists were compensated (48.1%). Among surgeons, otolaryngologists received the least payment per compensated physician ($573) and per capita ($275). Compared to the highest paid surgical specialty (orthopedics), there was more than a 13-fold difference in mean payment per compensated physician ($7521 vs $573) and roughly a 20-fold difference in per capita payment ($5404 vs $275). Both the mean payment per compensated physician and per capita payment of the nearest surgical specialty in terms of payment (ophthalmology) were more than double that of otolaryngology ($1302 vs $573 and $665 vs $275, respectively). Variance in total payments to individual surgeons was smallest in the field of otolaryngology (SD, $2806). There was an approximately 35-fold difference in the standard deviation of mean payment per compensated physician compared to the specialty with the highest variation (orthopedics, $98,535) and greater than 2-fold difference compared to the nearest specialty in terms of variation (urology, $6527). The Gini Index was 0.874 for nonresearch industry payments to individual otolaryngologists and ranged from 0.846 (urology) to 0.954 (orthopedics) across all surgical specialties.

Nonresearch Industry Payments within Otolaryngology

A total 15,774 transfers of value worth $2,570,205 were identified as being paid to 4488 otolaryngologists for purposes other than research by drug and device manufacturers.
and GPOs over the study period. The distribution of total payment amounts received by individual otolaryngologists was also skewed, with the top 10% of earners accounting for 86% ($2,199,254) of the overall value approximately half of this value ($1,084,349) was attributed to the top 1% of earners (Figure 3). In contrast to the top earners, the majority of otolaryngologists received less than $200 in nonresearch industry payments (Figure 4). The mean payment amount to otolaryngologists ($573) was almost 8-fold greater than the median ($72; IQR, $26-$162).

**Nonresearch Industry Payments to Otolaryngologists by Specialization**

Sponsoring manufacturers and GPOs attributed 76.4% of all nonresearch payment ($1,964,581) made over the reporting period to otolaryngologists with no specialization specified by CMS Healthcare Provider Taxonomy coding (Table 2). Otolaryngologists identified as practicing within the field of otology/neurotology received the highest mean payment per compensated physician, which was nearly 3-fold greater than the mean payment to otolaryngologists overall ($1671 vs $573). Variance in payments was also greatest within the field of otology/neurotology; there was nearly a 2-fold difference in the standard deviation of mean payment per compensated otologist/neurotologist compared to otolaryngologists overall ($5349 vs $2806).

### Table 1. Nonresearch Industry Payments Made between August 1, 2013, and December 31, 2013, to Surgeons by Specialty According to Sunshine Act Data.

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Total Surgeons Receiving Payment</th>
<th>Total Active Surgeons</th>
<th>% Surgeons Receiving Payment</th>
<th>Mean Payment per Compensated Surgeon ± Standard Deviation</th>
<th>Per Capita Payment ± Standard Deviation</th>
<th>Gini Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>All surgeons</td>
<td>57,173</td>
<td>102,298</td>
<td>55.89</td>
<td>$3009 ± 50,930</td>
<td>$1681 ± 28,464</td>
<td>0.942</td>
</tr>
<tr>
<td>Orthopaedic surgery</td>
<td>14,065</td>
<td>19,614</td>
<td>71.71</td>
<td>$7521 ± 98,535</td>
<td>$5404 ± 70,658</td>
<td>0.954</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>3003</td>
<td>5112</td>
<td>58.74</td>
<td>$4737 ± 32,811</td>
<td>$2778 ± 19,275</td>
<td>0.928</td>
</tr>
<tr>
<td>Vascular surgery</td>
<td>1912</td>
<td>3043</td>
<td>62.83</td>
<td>$1640 ± 8183</td>
<td>$1030 ± 5142</td>
<td>0.854</td>
</tr>
<tr>
<td>Thoracic surgery</td>
<td>2092</td>
<td>4609</td>
<td>45.39</td>
<td>$1573 ± 7351</td>
<td>$714 ± 3336</td>
<td>0.872</td>
</tr>
<tr>
<td>Plastic surgery</td>
<td>3508</td>
<td>7001</td>
<td>50.11</td>
<td>$1435 ± 8322</td>
<td>$719 ± 4170</td>
<td>0.894</td>
</tr>
<tr>
<td>General surgery</td>
<td>12,645</td>
<td>25,383</td>
<td>49.82</td>
<td>$1379 ± 22,627</td>
<td>$685 ± 11,272</td>
<td>0.906</td>
</tr>
<tr>
<td>Urology</td>
<td>6118</td>
<td>9856</td>
<td>62.07</td>
<td>$1367 ± 6527</td>
<td>$849 ± 4051</td>
<td>0.846</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>9342</td>
<td>18,342</td>
<td>50.93</td>
<td>$1302 ± 9527</td>
<td>$665 ± 4853</td>
<td>0.901</td>
</tr>
<tr>
<td>Otolaryngology</td>
<td>4488</td>
<td>9338</td>
<td>48.06</td>
<td>$573 ± 2806</td>
<td>$275 ± 1348</td>
<td>0.874</td>
</tr>
</tbody>
</table>

**Figure 3.** Distribution of total payment to individual otolaryngologists who received nonresearch payments from industry. Parenthetical percentages indicate payment amount relative to sum total nonresearch industry payment in otolaryngology.

**Figure 4.** Frequency of total nonresearch-third-party payment amounts received by otolaryngologists. Total payments exceeding $200 to individual otolaryngologists not shown in histogram.

### Nonresearch Industry Payments to Otolaryngologists by Sponsor

Sponsoring manufacturers and GPOs were identified as making nonresearch payment to otolaryngologists over the reporting period (data not shown). The top 20 highest paying sponsors accounted
for 85.0% of all nonresearch payment ($2,185,810), with the top 10 and top 5 highest paying sponsors accounting for 66.3% ($1,704,446) and 45.6% ($1,171,414) of the overall value, respectively. Among the top 20 highest paying sponsors, 65.0% (13) manufactured devices, 20.0% (4) manufactured pharmaceuticals, and 15.0% (3) manufactured both. Among the top 5 highest paying sponsors, 80.0% (4) manufactured devices, with a single device manufacturer accounting for 15.8% ($405,868) of all nonresearch payment.

**Discussion**

In this study of newly released physician payment information provided by industry sponsors under the Sunshine Act, we found that otolaryngologists on average received the least nonresearch compensation from manufacturers and GPOs as compared to other surgeons. The difference between otolaryngology and all other surgical specialties was rather large, as the mean payment within otolaryngology was less than half that of ophthalmology, the surgical specialty with the next lowest mean payment per compensated surgeon and per capita. The variance in total payments to individual surgeons was also smallest in otolaryngology, as the standard deviation in mean payment to otolaryngologists was less than half that of urology, the surgical specialty with the next lowest standard deviation in mean payment per compensated surgeon and per capita. In addition, we found that slightly fewer than half of active otolaryngologists were reported as receiving industry payments over the study period, a proportion that was second smallest among the surgical specialties and roughly 20% to 50% lower than that observed in urology, vascular surgery, neurosurgery, and orthopedics. These findings suggest that otolaryngologists did not receive large gifts,
consulting fees, and other nonresearch payments from industry as often as other surgeons over the study period.

Within the field of otolaryngology, we found that not all surgeons are alike in receiving payments from industry for purposes other than research. Although the variance in total industry payments to individual surgeons was smallest in otolaryngology, the distribution was nonetheless highly skewed by top earners; roughly 90% of the total reported amount paid to otolaryngologists by industry went to the top 10% of earners. This skewed distribution and the high Gini Index of otolaryngology indicate that the field is similar to other surgical specialties in that there appears to be a small subset of surgeons who maintain significant financial ties with industry. These otolaryngologists may be receiving compensation for services rendered to device manufacturers, as we found that surgeons practicing in the device-rich field of otology/neurotology received on average nearly triple the mean payment of otolaryngologists overall and had the highest level of variance in payments received. This notion is further supported by our finding that device manufacturers were by and large the highest paying industry sponsors of otolaryngologists. In contrast to specialization, we did not find otolaryngologists to meaningfully differ in mean nonresearch payment amount received when compared by geographical location. However, we did find that otolaryngologists in the West census region were less likely to have received nonresearch industry payment, a finding that may be explained by the low density of otolaryngologists in many Western states; relationships with industry may not be as strongly facilitated by proximity in large, less populous states where the geographic distribution of otolaryngologists is more dispersed.

To our knowledge, this study is the first to characterize industry payments to otolaryngologists. Previous work quantitating industry payments to physicians has not examined providers by specialty, omitted otolaryngology as a specialty for consideration, or focused exclusively on other specialties. In the field of otolaryngology, studies exploring financial conflicts of interest among surgeons have assessed self-disclosures of industry relationships for authors publishing clinical practice guidelines and studies in this journal. Understanding the frequency of and discrepancies in self-disclosures among otolaryngologists is certainly important, as patients may regard disclosure to be an important means of surgeon self-regulation and COI risk management. Nonetheless, the nationwide physician-level payment information reported under the Sunshine Act can shed additional light on the nature and extent of financial ties to industry for the broad spectrum of otolaryngologists.

Although the primary advantage of our study is that it leverages novel payment information newly released under the Sunshine Act, this data source has several limitations that require a critical interpretation of our findings. The initial release of the Open Payments database only provides 5 months of payment information, limiting the external validity of our findings. In addition, there have been some concerns regarding the accuracy and context of payment reporting in this initial release, which may limit the internal validity of our findings. Furthermore, our comparison between otolaryngic specializations relied on CMS Healthcare Provider Taxonomy codes, which currently define 3 specializations related to plastic surgery and none related to head and neck oncology, laryngology, or rhinology; further improvement in the system and application of these biannually revised codes will be needed to more comprehensively assess how subspecialty communities differ in their relationships with industry. Finally, it is also likely that our findings underestimate the amount paid to surgeons and the proportion of compensated surgeons given that we excluded payments without an identified provider and did not consider research payments. Despite these limitations, it is worth noting that our results were comparable with those of a previous study examining physician-level industry payment data from the Massachusetts Department of Health and Human Services, though significant differences between the 2 studies preclude more meaningful comparison of their findings.

This study presents a novel approach to understanding industry payments within the field of otolaryngology using data newly released under the Sunshine Act. The payment information reported in the initial release of the Open Payments databases suggests that otolaryngologists had more limited financial ties to industry than other surgeons when it comes to nonresearch payments, though much variance exists among otolaryngologists. It is anticipated that the Open Payments databases will continue to improve as reporting tools in subsequent iterations and may thus serve as a powerful mechanism for otolaryngologists to self-regulate potential conflicts of interest within the field. Building this capability will not only require refinement of CMS Healthcare Provider Taxonomy Codes and the Open Payments databases, but also an increased awareness of this resource among otolaryngologists. We hope that this initial exploration of the Open Payments data set will promote such awareness and encourage others to leverage this publicly available information as a means of benchmarking against peers, informing discussions with regulators, investigating policy influences on physician behaviors, and further understanding variation in the potential for conflicts of interest within this clinically diverse field.

**Author Contributions**

Vinay K. Rathi, study conception and design, analysis and interpretation of data, drafting the article, revising manuscript critically for important intellectual content, final approval; Andre M. Samuel, acquisition of data, analysis and interpretation of data, revising manuscript critically for important intellectual content, final approval; Saral Mehta, study conception and design, analysis and interpretation of data, drafting the article, revising manuscript critically for important intellectual content, final approval.

**Disclosures**

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