Brief Report

Analysis of current financial relationships between emergency physicians and industry

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ABSTRACT

Objective: Characterize the frequency and magnitude of all categories of publicly reported financial payments made to emergency physicians (EPs) in the United States (U.S.) in 2017.

Methods: This cross-sectional study of the 2017 Centers for Medicare and Medicaid Services Open Payments Database was exempt from Institutional Review Board Review. We calculated descriptive statistics of the frequency, type, and amount (medians) of general, research, and ownership transactions made to EPs from industry, described regional differences of median payments to EPs, and characterized the drugs or devices most commonly associated with transactions.

Results: In 2017, among 40,899 practicing U.S. EPs, 14,447 (35.4%) received 51,870 general payments from industry totaling $12,870,832. The median per-physician payment was $18.30 (interquartile range [IQR], $13.63–$60.90). The most frequent transaction was food and beverage (89.6%), though most payments by dollar amount were related to speaker and consulting fees (74.5%). Antithrombotics were the most frequently drug or device associated with transactions. Only 35 (0.08%) and 20 (0.05%) EPs had research and ownership relationships with industry, respectively. A significant difference was observed in median payments per physician across all U.S. Census regions (p < 0.01) except when comparing Northeast and West (p = 1.00).

Conclusions: Over one-third of U.S. EPs had general payments from industry in 2017, while <1% of EPs had either research and ownership payments during this time period. Consistent with previous research, most payments to EPs are of low monetary value. Antithrombotics remain the most frequent drug associated with payments to EPs.

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1. Introduction

Physicians’ financial relationships with industry have garnered significant attention [1]. Prior to the 2010 Physician Payments Sunshine Act (PPSA), no reliable method existed to ascertain physicians’ financial relationships with industry. The PPSA requires pharmaceutical and biomedical device manufacturers to disclose all payments and transfers of value to physicians and hospitals to the Centers for Medicare and Medicaid Services (CMS) [2]. As of 2013 when CMS began collecting data, this information has been publicly available through the online Open Payments Database (OPD).

Tringale and colleagues’ study of the 2015 OPD provided an ecological analysis of physician financial relationships with industry as it varies across specialty [3]. A follow-up study by Fleischman et al. specifically addressed the national landscape of financial conflicts of interest (FCOIs) in emergency medicine compared to other specialties, using data from the 2014 OPD for nonresearch, nonroyalty financial payments [4]. In their investigation, 30% of all emergency physicians (EPs) in the United States (U.S.) had received a payment from industry. However, to our knowledge, no published data exists on either: 1) the full extent of all categories of financial relationships between industry and EPs, and 2) how these relationships vary geographically. Therefore, we sought to characterize the frequency, magnitude, and geographic variation of all categories of publicly reported financial payments made to EPs in the U.S. in 2017, using methods previously described [4,5].

2. Materials and methods

2.1. Study design and human subjects

This cross-sectional study of the 2017 CMS Open Payments Database OPD was deemed to be exempt from the need for Institutional Review Board approval.
2.2. Data source

The OPD is an online, freely accessible database that was first introduced publicly on August 2013. Since that time, it records information related to industry payments made to physicians and organizations from industry related to specific medical devices or pharmaceuticals. Information in this database includes payments received by physicians that are divided into three categories across three separate databases: general, research, and ownership payments. An in-depth description of these payments can be found on the OPD website (https://www.cms.gov/openpayments/about/natures-of-payment.html). Payments include cash, cash-equivalent, in-kind items, services, and stock worth a minimum of $10 received individually or $100 received in aggregate in the calendar year.

2.3. Data processing

In order to isolate EPs in the OPD, we utilized the CMS Healthcare Provider Taxonomy Codes for emergency physicians (207P00000X) and emergency physician subspecialists (207PE0004X, 207PH0002X, 207PS0010X, 207PP0204X, 207PE0005X, 207PT0002X). Since a single physician may be represented multiple times in the database as OPD reports each payment received separately, we categorized all payments received by EPs by their unique 10-digit CMS National Provider Identifier (NPI) number prior to analysis in each of the three separate files provided by OPD. We then created a single file prior to analysis that included all payments received by EPs NPI number for general, research, ownership data. We further classified general payments into six broad categories, namely, (1) compensation for services other than consulting, including serving as faculty or as a speaker at a venue other than a continuing education program; (2) consulting fee; (3) travel and lodging; (4) honoraria; (5) food and beverage; and (6) education. Ownership payments were subdivided into amount invested and value of interest.

2.4. Choropleth maps

Using the U.S. Census Bureau definitions of states and regions, state and county maps were created by grouping each NPI with its associated zip code, which further allowed for calculation of median FCOIs by regions.

2.5. Outcome measures

The primary outcomes of this study were frequency, type, amount, and geographic variation of FCOI among EPs receiving a payment from industry. A secondary outcome characterized the most common drugs or devices associated with these payments.

2.6. Analysis

The OPD data served as the numerator for frequency analysis. To determine the denominator for these analyses, we obtained the total number of practicing EPs in the U.S. by state from the 2017 Association of American Medical Colleges State Physician Workforce Data Book and calculated a total sum for each state as well as the entire nation. Frequencies and measures of central tendencies were used to describe frequency, type, and amount of payments received by industry for both the entire cohort and regional data. Kruskal-Wallis with Dunn’s pairwise comparisons was used to assess regional differences in median payments. All statistical analyses were conducted using SPSS (version 25; IBM Corporation); choropleth maps were generated in R 3.5.1 (R Foundation for Statistical Computing) using the choroplethr 3.6.2 package.

3. Results

3.1. General payments

In 2017, among 40,899 practicing U.S. EPs, 14,477 (35.4%) received 51,870 general payments from industry totaling $12,870,832. The median per-physician payment was $18 (interquartile range [IQR], $13–$60) with a range of $2,116,140. Additionally, 296 providers with FCOI (2.0%) were paid more than $5000 in 2017. The most frequent transaction was food and beverage (89.6%) with all other categories each accounting for <5% of transactions. However, compensation for services other than consulting, including serving as faculty or as a speaker at a venue other than a continuing education program (41.7%) and consulting fees (32.8%) were the most significant transaction by dollar amount (Web Appendix Table 1). A total of 487 companies provided compensation to EPs. The top-15 highest-paying companies accounted for 73.7% of all general payments with Ethicon Endo-Surgery, Inc. (17%) and Janssen Pharmaceuticals, Inc. (10.6%) accounting for over one-fourth of transactions. Payments to EPs included information associated most frequently with the antithrombotic drugs Xarelto (rivaroxaban), Eliquis (apixaban), Activase (alteplase), and Pradaxa (dabigatran), which accounted for 19% of transactions.

3.2. Research payments

35 EPs (0.08%) received 137 research payments from industry totaling $406,390 (median, $2450; IQR, $1079–$10,703; range, $85,364). Of these 35 EPs, 16 (45.7%) were paid more than $5000 in 2017. A total of 20 companies provided research compensation to EPs with Covidien LP (24.4%), Taro Pharmaceuticals USA, Inc. (21.0%), and Zoll Circulation, Inc. (19.5%) accounting for approximately 65% of all payments. Payments to EPs included information associated most frequently with Topicort Spray 0.25% (21.0%), CapnOLine (20.4%), and Temperature Management System (19.5%).

3.3. Physician ownership

20 EPs (0.05%) held direct ownership interests with industry in 20 companies. The median total amount invested in ownership with industry was $82,500 (IQR, $56,077–$102,661), while the median value of interest was $100,000 (IQR, $68,750–$215,963). All 20 EPs involved in ownership with industry had amounts greater than $5000.

3.4. Regional variation

Fig. 1 shows the percentage of EPs receiving payments per state, while Fig. 2 shows the median dollar amount received per EPs by county. Kruskal-Wallis testing revealed a significant difference in median payments per physician across U.S. Census regions (Northeast, $53.29; Midwest, $38.58; South, $45.39; West, $53.86; p < 0.01). Dunn’s pairwise comparisons showed significant differences between all pairwise comparisons (p < 0.01 for all comparisons) except when comparing Northeast and West (p = 1.00).

3.5. Highest payments received by EPs

We assessed the top 10%, 1%, and 0.01% of EPs with FCOI to assess the extent to which their relationships with industry were accounted for among all payments made to this cohort in 2017. The top 10% (n = 1447), 1% (n = 144), and 0.01% (n = 14) of EPs of the 14,477 with FCOI accounted for 93.6%, 75.2%, and 35.8% of the all payments made in 2017, respectively.
4. Discussion

In this cross-sectional study of the CMS OPD, approximately 35% of U.S. EPs had a reportable financial relationship with industry, with a small median payment per physician similar to that reported by both Fleischman et al. [4] and Tringale et al. [3] Food and beverage payments were the most frequent transaction, accounting for 89% of the total, though the amounts of each individual transaction were negligible. In contrast, while significantly fewer EPs were compensated for acting in the role of ‘spokesperson’ or consultant for a company, these transaction were of much greater magnitude, which is consistent with other studies of the OPD across specialties [3,4].

In this study, 0.08% and 0.05% of EPs had research or ownership relationships, respectively, with industry in 2017, with a substantially higher median payment compared to general payments; these findings are consistent with the trends observed in Marshall et al.’s and Tringale et al.’s epidemiological analysis of the distribution of payments to physicians documented in the OPD in 2013 and 2015, respectively [3,6]. We further sought to characterize the proportion of EPs with FCOI deemed significant enough to require public reporting (greater than $5000) according to the National Institutes of Health (NIH). We identified that 2%, 45.7%, and 100% of EPs receiving general payments, research payments, and ownership investment or interest from industry, respectively, were greater than $5000. Furthermore, three-fourths of all payments to EPs in 2017 were isolated to the top 1% of EPs with FCOI, suggesting that EPs in general do not have significant relationships with industry [3,4,6].

While regional differences exist in regard to median payments per physician with the Northeast and South having a greater median per physician compared to the Midwest and West, these statistically significant differences are arguable negligible in terms of total dollar amount and well below the $5000 considered significant by NIH. There is a lack of research, however, on regional differences in FCOI among physicians nationally. One study of neurologist FCOI nationally revealed no differences in median generally payments by region, though the Northeast and West had higher median research payments compared to both the Midwest and the South [5].

Regarding drugs or devices associated with conflicts, similar to the findings among EPs noted by Fleischman et al. [4], antithrombotic drugs accounted for the most frequent drug associated with financial payments in this study. In one study, physicians receiving a single industry-sponsored meal increased their prescribing of the drugs that was promoted [7]. Given recent concern about the expanded use of thrombolytic therapy in the setting of cerebrovascular accidents [8], industry relationships with EPs may play an important role in this area of debate worth further investigation.

Finally, there remains uncertainty in the literature regarding patient perspectives on physician FCOI. While one systematic review revealed that patients believe FCOI influence physician behavior and should be disclosed [9], more data is needed related to the appropriate manner by which to disclose conflicts in general, and how these preferences may vary by specialty and clinical setting.

This study had several limitations, including use of the OPD as the data source [10]. We identified that over half of all general payments were not associated with any device or pharmaceutical, which has been documented previously [3-5,10]. Further, our data may underestimate both the true population prevalence of FCOI and median amount of conflict per EPs as the OPD does not collect financial transactions.
related to: 1) products that are still in developmental stages, or 2) “unre-
stricted grants to medical organizations or specialty associations, pay-
ments by emergency medicine contract management groups, or
journal advertisements.” [4].

In conclusion, we discovered over one-third of EPs have nonresearch, nonownership relationships with industry, which is con-
sistent with data from both the 2014 and 2015 OPD. Our study addition-
ally discovered that <1% of EPs had either research or ownerships
relationships in 2017. Most transactions were related to food and bever-
ages, though the majority of dollars were associated with speaking on
behalf and consulting with industry. As with previous studies, antithrombotics were the most common drug associated with industry
transactions to emergency physicians. It remains to be determined the
extent of industry influence related to antithrombotics prescribing
patterns for providers presented this information in the food and
beverage setting. Future studies assessing the association of emergency
physicians receiving a single industry-sponsored meal related
antithrombotics using Dejon et al.’s methods [7] to isolated these physi-
cians in the Medicare Part D database may answer whether industry in-
fluence relates to increase in prescribing of the drugs that were
promoted.

Supplementary data to this article can be found online at https://doi.

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Declarations of interest

None.

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