Title

Industry Relationships With Medical Oncologists: Who Are the High-Payment Physicians?

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Industry Relationships With Medical Oncologists: Who Are the High-Payment Physicians?

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QUESTION ASKED: What are the characteristics of US medical oncologists who receive very high industry payments (> $100,000 US dollars [USD]/y) and what leadership positions do they hold?

SUMMARY ANSWER: The median annual payment among the selected 139 medical oncologists was $154,613 USD. More than half of these high-payment physicians hold leadership positions at the hospital, and one quarter serve on journal editorial boards.

WHAT WE DID: This retrospective cohort study used the Open Payments data set to identify all US-based medical oncologists who received $100,000+ USD in general payments linked to cancer medications in 2018. Open Payments and a web-based search were used to identify physician characteristics, demographics, research profile, and leadership positions.

WHAT WE FOUND: One hundred thirty-nine medical oncologists received > $100,000 USD in general payments. The median payment was $154,613 USD, and total payment was $24.2 million USD. These high-payment physicians represent 1% of all US medical oncologists (N = 10,620) yet accounted for 37% of all industry payments. Sixty percent (84 of 139) and 21% (29 of 139) of these high-payment physicians hold hospital and specialty association leadership roles, respectively; 72% (100 of 139) hold faculty appointments. One quarter (24%, 33 of 139) of these high-payment physicians serve on journal editorial boards, and 10% (14 of 139) have authored clinical practice guidelines.

BIAS, CONFOUNDING FACTORS, DRAWBACKS: Because payments were only included if they were linked to a cancer medicine, the number of physicians receiving > $100,000 USD in annual payments is likely an underestimate. Some of the payments to individual physicians may represent lump sum payments to institutions or departments. The internet-based search of leadership positions may underestimate positions of influence.

REAL-LIFE IMPLICATIONS: A small number of medical oncologists receive very high payments from the pharmaceutical industry. These physicians hold major leadership roles within oncology. Further work is needed to understand the extent to which these conflicts of interest may shape clinical practice and policy.

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ASSOCIATED CONTENT

Data Supplement

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Industry Relationships With Medical Oncologists: Who Are the High-Payment Physicians?

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abstract

PURPOSE Many oncologists have relationships with industry. Previous work has shown that these payments are usually modest; however, there exist a subset of medical oncologists who receive more than $100,000 US dollars (USD) annually. Here, we describe the characteristics of these physicians.

METHODS This retrospective cohort study used the Open Payments data set to identify all US-based medical oncologists/hematologists who received $100,000+ USD in general payments linked to cancer medications in 2018. Open Payments and a web-based search were used to identify physician characteristics, demographics, research profile, and leadership positions.

RESULTS One hundred thirty-nine medical oncologists received > $100,000 USD in general payments. The median payment was $154,613 USD, and the total payment was $24.2 million USD. These high-payment physicians represent 1% of all US medical oncologists (N = 10,620) yet account for 37% of all industry payments in 2018. Sixty percent (84 of 139) and 21% (29 of 139) of these high-payment physicians hold hospital and specialty association leadership roles, respectively. One quarter (24%, 33 of 139) serve on journal editorial boards, and 10% (14 of 139) have authored clinical practice guidelines; 72% (100 of 139) hold faculty appointments.

CONCLUSION A small number of medical oncologists receive very high payments from the pharmaceutical industry. These physicians hold major leadership roles within oncology. Further work is needed to understand the extent to which these conflicts of interest may shape clinical practice and policy.

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INTRODUCTION

Industry payments from pharmaceutical companies to physicians are common.[1-7] Although many of these payments are related to research initiatives, a substantial proportion represent more general personal payments in the form of honoraria, consultant fees, gifts, and reimbursement for meals and travel.[6,7] These payments create potential financial conflicts of interest (fCOIs) for physicians. fCOIs can manifest themselves both clinically (eg, at the bedside when prescribing medications) and at the system level (eg, teaching, writing articles or editorials, developing guidelines, and/or making regulatory decisions). fCOIs may be particularly problematic in oncology, as treatments are expensive, often have significant toxicities, and may be associated with modest benefits.[8,9] The cost of these cancer therapeutics has been rising steadily over the past decade, with associated increased drug revenue for pharmaceutical companies.[5,9,10] In addition to creating fCOIs, which act indirectly, many of these payments reflect the direct influence on the practice of medicine; honoraria, in particular, are generally payments to physicians to give pharmaceutical company–authored presentations.[11,12]

A recent study identified that the pharmaceutical oncology drug revenue has increased by 70% in the past decade, whereas the nononcology revenue has decreased by 18%.[13] Parallel to this observation, our group has recently shown that the number and value of personal payments to oncology physicians have been increasing over time.[5] This study identified 52,441 physicians who received payments related to oncology medicines during 2016-2018.[5] The median value of payments per physician was modest ($109 US dollars [USD] in 2018).[5] However, a small group (1%) of physicians received more than $100,000 USD in industry general

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payments in 2018.[5] A payment of this magnitude creates a high risk of fCOI. Although previous work has shown that even modest payments can influence physician behavior,[14] the US Department of Health and Human Services considers $10,000 USD to be a significant payment.[15]

In this context, we sought to characterize the phenotype of medical oncologists who receive annual payments from industry > $100,000 USD and explore the positions of influence that they hold.

METHODS

Study Population

In this retrospective cohort study, we used the Open Payments (OP) data set to identify all US-based medical oncologists/hematologists who received at least $100,000 USD in 2018 general payments. We used the same methodologic approach as our previous work to link payments to a specific cancer medicine.[5] Medical oncologists/hematologists with $100,000+ USD in payments are referred to as high-payment physicians.

Consistent with our previous work, we included general payments (consulting fees, honoraria, speaking fees, travel expenses, and meals); research and ownership/investment interests were not included.[5] To ensure that our final data set was restricted to therapeutics with an oncology-based indication, we excluded all payments made for devices or medical supplies and only included payments that fell under a product category containing the keyword oncology. Medicines without direct anticancer properties (ie, supportive care) and/or also with indications outside oncology (ie, rituximab and everolimus) were excluded (Data Supplement, online only). Twenty percent of payments were associated with more than one drug; only the primary agent listed for each payment was considered. One investigator (D.E.M.) classified physician specialties and drugs; these were subsequently reviewed by two practicing oncologists (C.M.B. and V.P.); discrepancies were resolved by consensus agreement.

Variable Definition

For physicians included in our study population, the OP database and a structured web-based search were used to characterize study physicians. Data variables from OP included name, annual payment, drugs associated with payment, and specialty. Additional variables were identified on the basis of a web-based search in February-May 2021. Examples of internet search phrases include but were not limited to "*Physician name* MD," "*Physician name specialty*," "*Physician name* oncology," "*Physician name state*," "*Physician name institution name*," "*Physician name* linkedin," "*Physician name* education," "*Physician name* top doctor," "*Physician name* journal editorial," "*Physician name* twitter," "*Physician name* professor," "*Physician name* director," and "*Physician name* retired." Examples of webpages used include but were not limited to *PubMed*, *Google Scholar*, *LinkedIn*, *YouTube*, *Twitter*, *Doximity*, *Castle Connolly*, institutional profiles, specialist association profiles, journal editorial board webpages, personal webpages, and news articles.

Sex was determined using the web-based tool Gender API, a gender inference service that assigns men, women, or unknown sex on the basis of a large database obtained from government records and social network data.[16] The response also includes sample number and accuracy percentage. In a benchmark comparison of five common gender inference services, Gender API was found to be the best overall performer with the largest database, lowest inaccuracies (8%), and lowest nonclassification rate (3%).[16] This tool has also been used in multiple other studies investigating gender-based outcomes.[17-19] In the case of < 80% certainty (5 of 139, 3.5% of the study cohort), sex was assigned on the basis of the use of pronouns or self-identification on relevant webpages. Active clinical work was determined on the basis of whether the physicians indicated that they are actively accepting patients or working in their clinical role, on the basis of LinkedIn, institutional profiles, personal webpages, and physician directories. Years in practice was derived using the year of medical school graduation. The location and setting of practice were assigned on the basis of institutional address.

A PubMed search was completed using the physician name. If multiple physicians with the same name had published, the article was verified to belong to the physician on the basis of their academic affiliations. Hospital leadership positions were defined as a chair, chief, medical director, program director, or department head position during their career, either past or present. Subspecialty organization leadership positions were defined as a committee, board, or elected position within that organization, either past or present. Faculty positions were defined as assistant professor, associate professor, or professor positions, either past or present. Guideline committee membership was determined if the physician had published a clinical practice guideline during the past 5 years. Journal editorial board membership was determined if the physician was listed on the journal editorial board for an academic medical journal in the past 5 years. The web-based search was used to identify physicians with a Top Doctor Award at the state or national level.

Statistical Analysis

2018 data from OP were downloaded and processed as described previously.[5] We computed medians and interquartile ranges (IQRs) to describe numeric variables and frequencies and proportions to describe categorical variables, including those that were either dichotomous or

polytomous. All computations were performed using R version 4.1.0.

RESULTS

Demographics and Clinical Profile of High-Payment Medical Oncologists

During 2018, 139 medical oncologists received industry payments of ≥ $100,000 USD for cancer medicines; the median value of payments was $154,613 USD (IQR $117,436-$207,046 USD). This group represents 1% of all US medical oncologists (N = 10,620) who received payments in 2018. The collective value of payments to these 139 physicians was $24 million USD; this represents 37% of total industry payments made to all US medical oncologists in 2018. Characteristics of the study cohort are shown in Table 1. The median number of years in practice was 23 (IQR 20-31); 85% (118 of 139) were men.

The majority (95%, 132 of 139) of high-payment physicians were active in clinical work. Fifty-six percent (78 of 139) worked in an academic setting. Thirty-one percent (43 of 139) of these physicians worked at National Cancer Institute–designated cancer centers; 23% (32 of 139) worked at National Comprehensive Cancer Network (NCCN) centers. Regionally, the greatest proportion of physicians were based in California (17%, 23 of 139), Texas (12%, 16 of 139), Florida (10%, 14 of 139), and New York (8%, 11 of 139).

Leadership Profile of High-Payment Medical Oncologists

The majority of high-payment physicians currently hold or previously held hospital leadership positions (60%, 84 of 139) or faculty appointments (72%, 100 of 139; Table 2). One quarter (24%, 33 of 139) have served on journal editorial boards, and 21% (29 of 139) have held leadership positions in specialty associations in the past 5 years. Ten percent of physicians (14 of 139) have authored clinical practice guidelines in the past 5 years. Three physicians authored NCCN, and two physicians authored ASCO guidelines during 2016-2021 (one of which was published in 2018 when payments were made). One third (37%, 52 of 139) of physicians were identified at a state or national level as a top doctor. Ninety percent of physicians (125 of 139) had published scientific articles; in the past 5 years, the median number of publications was 9 (IQR 2-25).

TABLE 1. Characteristics of US Medical Oncologists With > $100,000 US Dollars in General Payments From the Pharmaceutical Industry in 2018 (N = 139)

Characteristic	N = 139
Sex, No. (%)	
Men	118 (85)
Women	21 (15)
Years since graduation (IQR)	23 (20-31)
Active clinical work, No. (%)	
Yes	132 (95)
No	7 (5)
Clinical practice setting, No. (%)	
Academic	78 (56)
Community	54 (39)
Nonapplicable	7 (5)

Abbreviation: IQR, interquartile range.

DISCUSSION

In this study, we describe the characteristics of US medical oncologists who received $100,000+ USD in industry payments in 2018. Two key findings have emerged. First, although these high-payment physicians comprise only 1% of all medical oncologists, they received $24 million USD in payments. This represents 37% of all general payments from industry made to medical oncologists.[5] Second, these data illustrate that a substantial proportion of high-payment physicians hold leadership positions, write guidelines, and sit on journal editorial boards within our field. This is an important finding as the potential impact of fCOI from this small group of physicians on practice and policy may be substantial. The industry generally refers to physicians to whom it pays honoraria and other nonresearch amounts as key opinion leaders or thought leaders, underscoring companies' interest in affecting practices.[11,12]

The proportion of high-payment medical oncologists who hold influential journal editorial board and guideline committee authorship positions (24% and 14%, respectively) is notable. Many guideline committees have set rules about how much an author is allowed to receive to participate.[20] For example, the NCCN recuses members on topics of direct conflict with a disclosed individual annual financial relationship of ≥ $20,000 USD, which is one fifth of our high-payment threshold.[21] A cross-sectional analysis of OP data by Mitchell et al[2] found that 84% of NCCN oncology guideline authors had accepted general industry payments. Recent work by Mitchell et al[22] also reported that oncologists recently appointed to NCCN guideline committees have greater financial ties to industry than their peers. Another cross-sectional study from Japan by Saito et al[3] found that 78% of authors from six prominent oncologic clinical guidelines had accepted general nonresearch payments, with 25% receiving ≥ $10,000 USD, 5% receiving ≥ $50,000 USD, and 1% receiving ≥ $100,000 USD. Haque et al[1] found that 80% of editors of 26 prominent oncology research journals had accepted nonresearch payments, with a mean value of $106,778 USD. A recent study by Sharma et al[23] demonstrated that this issue is not simply a theoretical problem. Editorialists for oncology randomized control trials with direct fCOI from a company were more likely to author an unduly favorable editorial for the cancer drugs manufactured by the same company compared with editorialists without such direct fCOI.[23] Wong et al[4] also showed that median general

TABLE 2. Leadership Profile of US Medical Oncologists With > $100,000 US Dollars in General Payments From the Pharmaceutical Industry in 2018 (N = 139)

Characteristic	N = 139, No. (%)
Faculty appointment	
Yes	100 (72)
No	39 (28)
Hospital leadership role	
Yes	84 (60)
No	55 (40)
Specialty association leadership role	
Yes	29 (21)
No	110 (79)
Journal editorial board	
Yes	33 (24)
No	106 (76)
Guideline author	
Yes	14 (10)
No	125 (90)
Publications in the past 5 years	
Yes	125 (90)
No	14 (10)
Twitter account	
Yes	32 (23)
No	107 (77)
Top Dr award	
Yes	52 (37)
No	87 (63)

payments are higher for physician editors than other physicians within the same specialty. Our data complement that of these studies from a novel perspective. These are the first to define this population of US-based physicians who receive large sums of industry payments in oncology and then quantify the prevalence of those who hold leadership roles within oncology.

Our cohort displayed a striking gender imbalance; only 15% were women. The 2019 Association of American Medical Colleges report estimates that 34% of medical and hematologic oncologists are women.[24] Almost half (48%) of US oncology fellows are now women.[25] Thus, regardless of their specialty within oncology, women are disproportionately under-represented in this cohort of high-payment physicians. Other recent studies have explored this gender imbalance in industry relationships on a more general scale and have shown that female interventional radiologists and radiation oncologists receive fewer and lower value payments than their male colleagues.[26,27] Age may also be a contributing factor. Although women currently comprise approximately one third of oncologists, in 2005, women only comprised 24% of the workforce.[28] It is, therefore, possible that on average, female oncologists are at a more junior phase of their career than male oncologists and may therefore be less sought after as key opinion leaders by the pharmaceutical industry. A study by Inoue et al[6] looked at characteristics of the top 5% of physicians by cumulative payments on OP and found that male physicians, physicians with 21-30 years in practice, and physicians who attended top 50 US medical schools received significantly higher industry payments than their colleagues.

Our study should be interpreted in light of methodologic limitations. We only captured payments that were associated with medicines, which have direct anticancer activity. Other drugs with indications outside of oncology (ie, rituximab) and supportive care medications (ie, antiemetics and growth factors) were not considered. Moreover, we only considered payments with a direct link to a cancer therapeutic—payments with no listed therapeutic were omitted. Accordingly, the number of physicians who earned > $100,000 USD in 2018 is likely an underestimate. In addition, characteristics of our study cohort were derived from relevant websites and other data sources on the internet. This information was obtained in the study year (2020-2021), whereas the financial data from OP are from 2018. Some information identified in the recent search may be slightly different from when payments were made in 2018. In addition, our data search was limited by how much information was available online for a given physician. As OP is limited to US physicians and the US health care industry, findings from this study will have limited generalizability outside of the United States. It is possible that some payments to physician leaders may represent lump payment for the work done by a collective group of physicians at an institution. Accordingly, although some payments might have been retained as income by the named physician, other payments might have been distributed to other physicians in the group and/or used for research overhead expenses of the larger team. Finally, although this study explicitly excluded payments for research, it is possible that some of the payments coded as general payments were in fact related to research activities. Although this misclassification would lead to an overestimate of individual physician income from industry, we think it unlikely that this form of bias has a major impact on the observed study results.

In summary, a small number of medical oncologists receive very large nonresearch payments from the pharmaceutical industry. These physicians hold important leadership positions, draft treatment guidelines, and serve on journal editorial boards. The findings identify a risk for perceived and real conflict of interest. Oncology specialty associations, guideline panels, and journal editorial boards should reconsider if it is appropriate for physicians with such large payments to hold these high-profile positions.

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

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Open Payments is a public database containing information reported by companies about payments made to US-licensed physicians (Open Payments).

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