

Financial Relationships With Industry Among National Comprehensive Cancer Network Guideline Authors

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IMPORTANCE Financial conflicts of interest (FCOIs) among authors of clinical practice guidelines have the potential to influence treatment recommendations.

OBJECTIVE To quantify FCOIs with industry among authors of the National Comprehensive Cancer Network (NCCN) guidelines.

DESIGN, SETTING, AND PARTICIPANTS We assessed FCOIs occurring during 2014 among NCCN guideline authors in the United States. All were physician members of the NCCN guideline committees for lung, breast, prostate, and colorectal cancer as of the end of 2014. The data source for FCOIs was Open Payments, which is publicly reported by the Centers for Medicare and Medicaid Services. This study was cross-sectional.

MAIN OUTCOMES AND MEASURES The proportion of NCCN authors having FCOIs with industry; the average amount received from industry sources per author.

RESULTS Of 125 guideline authors, 108 (86%) had at least 1 reported FCOI. Authors received an average of \$10 011 (range, \$0-\$106 859) in general payments (GPs), which include consulting, meals, lodging, and similar transfers of value, and \$236 066 (range \$0-\$2 756 713) in industry research payments (RPs), including funding associated with clinical trials. Approximately 84% of authors received GPs, while 47% received RPs. Eight (6%) had FCOIs in excess of the \$50 000 net and/or \$20 000 single-company maximums stipulated by NCCN.

CONCLUSIONS AND RELEVANCE Among NCCN guideline authors, FCOIs involving RPs were of greater value, while those involving GPs were more prevalent. Although FCOIs may result from engaging in important scholarship, FCOIs may still influence guideline authors in counterproductive ways. Research is needed to understand how best to manage author FCOIs during guideline creation.

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Clinical practice guidelines (CPGs) are highly influential within medicine, defining the standard of care for many ailments. Ideally, they should be based on a comprehensive evaluation of available data and unbiased expert opinion.¹ However, financial conflicts of interest (FCOIs) between guideline authors and industry create the potential for undue influence of for-profit companies in medical practice.²

Published evidence on the effects of FCOIs on guideline recommendations is limited,³ but suggests that authors with industry FCOIs are more likely to recommend specific drugs⁴ and assess clinical trial results more favorably.⁵ In addition, FCOIs influence physician prescribing practices, as physicians with FCOIs are more likely to prescribe brand-name drugs.⁶ The Open Payments Provision (“Sunshine Act”) of the Affordable Care Act recently made public all FCOIs between

industry and US physicians, facilitating systematic study of FCOIs and ending reliance on self-reporting.

Within oncology, the National Comprehensive Cancer Center (NCCN) guidelines influence clinician practice and define which drugs are reimbursable through Medicare.⁷ The goal of this study is to quantify the presence and extent of FCOIs among authors of recent NCCN guidelines for the treatment of breast, colon, prostate, and lung cancer.

Methods

Since August, 2013 the Sunshine Act has required that all US drug and device manufacturers disclose transfers of financial value greater than \$10 to physicians and teaching hospitals.

Payments are reported either as “general payments,” including gifts, consultancy and/or speaker fees, meals, and investment interests,⁸ or as “research payments,” including “any direct compensation, funding for coordination or implementation, or study participant expense”⁹ related to preclinical research, US Food and Drug Administration phase 1 to 4 trials, and investigator-initiated studies.¹⁰

We identified the authors who were active on the NCCN guideline panels for lung, colon, breast, and prostate cancer as of the end of 2014. These were selected as the malignant neoplasms with the highest incidence in the United States. Using the public Open Payments database (<https://www.cms.gov/openpayments/>), FCOIs for each author were manually abstracted. We included all payments occurring in 2014, excluded disputed payments, and calculated payment averages and ranges for general payments and research payments both together and separately. Authors active on multiple guidelines were counted only once. In sensitivity analysis we excluded FCOIs that fell below different dollar value thresholds (eg, <\$100), as physicians receiving such payments may be unaware of and/or less influenced by such payments. The study was reviewed by the University of North Carolina Office of Human Research Ethics and was found not to constitute human subjects research.

Results

We identified 125 authors across the 4 guidelines, of whom 108 (86%) had at least 1 reported FCOI, with no significant differences in frequency or monetary value of FCOIs among the 4 cancer types (eTable 1 in the [Supplement](#)). The total value of FCOIs reported in 2014 among these authors was \$30 287 549, representing \$29 036 127 in RPs and \$1 251 422 in general payments ([Table](#)).

Authors received a mean of \$10 011 in general payments (range, \$0-\$106 859) ([Table](#)). Most authors (70 [56%]) received \$1000 or more in general payments ([Figure 1](#)). These results were not sensitive to the inclusion of low-value FCOIs (eTable 2 in the [Supplement](#)).

Research payments were of much higher monetary value than general payments, but were less common among NCCN guideline authors. Authors received a mean of \$236 066 in research payments (range, \$0-\$2 756 713) ([Table](#)). Of the 125 authors, 84% received 1 or more general payments from industry while only 47% received any research payments. While a substantial portion of authors received general payments alone

Key Points

Question What is the prevalence of financial conflicts of interest with industry among National Comprehensive Cancer Network guideline authors?

Findings In this cross-sectional analysis of Open Payments data, 86% had financial conflicts of interest, including 84% who accepted general payments and 47% who accepted research payments.

Meaning The potential for undue influence of industry in oncology clinical practice guidelines should be addressed.

without also receiving research payments, the reverse was not true; only 3 authors (2%) received research payments without also receiving at least some general payments ([Figure 2](#)).

There were 8 authors (6%) whose FCOIs exceeded the \$50 000 net and/or \$20 000 single-company maximum stipulated by the NCCN guideline policy.

Discussion

Through recent federal initiatives to increase transparency of FCOIs between physicians and the pharmaceutical industry, there has been growing awareness of and debate over the role and influence of FCOIs in medicine. Some have resisted blanket condemnation of all apparent conflicts, many of which represent important scholarly activity.¹¹ Others remain concerned, given prior work suggesting that industry FCOIs can influence physician prescribing behavior,⁶ recommendations,⁴ and interpretation of clinical data.⁵

Our study demonstrates the high prevalence and significant monetary value of FCOIs among oncology guideline authors. Several findings are noteworthy. First, most of the dollar value of industry FCOIs was contained in research payments. While these payments support research and are often paid to the physician's institution, physicians accrue other, indirect benefits by procuring outside research funding. Therefore, research payments as well as general payments have the potential to create conflicts of interest. More investigation is needed on the relative influence of general payments and research funding on physician practice and guideline recommendations.

Second, we must consider the reasons that FCOIs emerge and their potential benefits. With the bulk of research funding coming from industry, accepting research funding is all but

Table. General Payments and Research Payments Received by NCCN Guideline Authors in 2014

Variable	Payments, Mean (Range), \$	
	General ^a	Research
Authors receiving, No. (%) [N = 125]	105 (84)	59 (47)
Total received, all authors	1 251 422	29 036 127
Per author	10 011 (0-106 859)	236 066 (0-2 756 713)
Companies from which each author received payment, No.	3.8 (0-19)	1.8 (0-13)
Value of payments from single company to single author, \$	2618 (2-39 863)	123 047 (17-1 823 352)

Abbreviation: NCCN, National Comprehensive Cancer Network.

^a Such as food, travel, lodging, consultancy fees.

Figure 1. Distribution of General Payment (GP) Totals Among National Comprehensive Cancer Network Guideline Authors, 2014

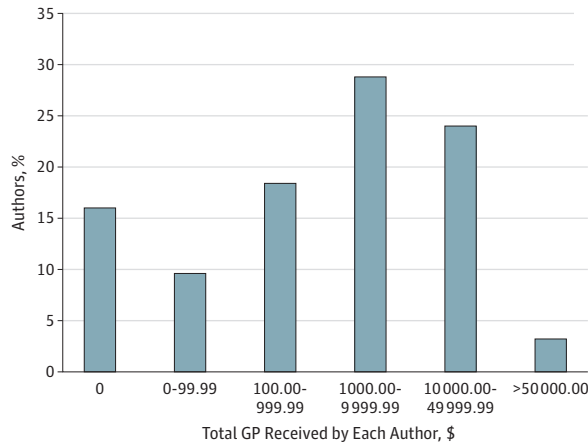
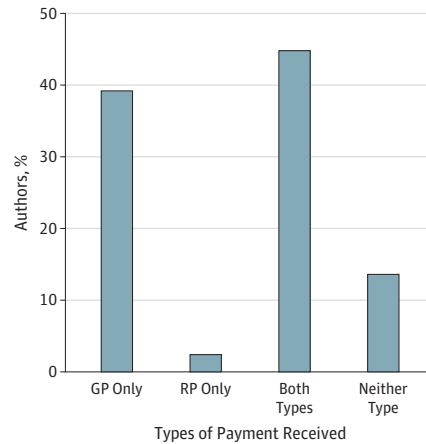


Figure 2. Types of Payments Received by National Comprehensive Cancer Network Guideline Authors



GP indicates general payments; RP, research payments.

mandatory for an academic clinical trialist. In addition, there may be societal value in having physicians who bridge the space between academia and industry, advising on areas of medical need, and then furthering such ideas into clinical research through involvement in research studies.

However, our data suggest that not all academic oncologists accrue FCOIs with industry as a result of research endeavors. A significant portion (39% of authors studied) accepted general payments in the absence of any research payments to indicate active research participation.

Guideline-writing bodies are aware of FCOIs, and some have taken action to moderate the influence of potentially conflicted authors. For example, the American Society of Clinical Oncology restricts authors with FCOIs to less than 50% of each guideline committee.¹² Indeed, the NCCN guidelines panels re-use members with “meaningful conflicts of interest” from discussion on specific topics and require members not to exceed annually \$20 000 in FCOIs with an individual corporation or \$50 000 in total FCOIs. Our findings suggest that most, but not all, NCCN authors comply with these requirements.

Our study was limited in that Open Payments collects data only on physicians, and so FCOIs of nonphysician NCCN guideline authors were not available; having such data would increase the average and total payments to authors we reported. While Open Payments data undergo a thorough validation process, including an opportunity for physicians to dispute reported payments before public release,¹³ there remain ways in which they may be imprecise or inaccurate. The

dispute process is difficult to navigate, potentially preventing physicians from correcting reporting errors.¹⁴ Because Open Payments is limited to US physicians, these findings would not be generalizable outside of the United States. In addition, physicians may have payments reported for participating in the National Institutes of Health or cooperative group trials using donated drugs,⁸ receiving grants from charitable organizations such as the Conquer Cancer Foundation, or coauthoring manuscripts,¹⁵ without having had direct interaction with any corporation.

Conclusions

How best to manage the FCOIs in oncology practice and clinical practice guidelines remains an area of open discussion and research. Practically, the high prevalence of FCOIs among physician field experts makes identifying individuals without FCOIs difficult, with the potential unwanted outcome of excluding valuable expertise. More research is needed to determine which kinds of relationships are more likely to produce the unwanted consequence of physician bias to create rational, evidence-based policies that allow for the participation of key clinical experts while managing real or perceived conflicts. Given the prevalence of FCOIs reported here, finding the answer to this question is critical.

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Drafting of the manuscript: Mitchell.
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Invited Commentary

No Conflict, No Interest

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Oncology research and clinical advancements often require financial partnerships and collaborations between industry and oncology physicians and researchers. These relationships between oncology and industry are increasing, and concerns exist regarding the extent to which financial conflicts of interest (FCOIs) can influence medical decisions and physician behavior.^{1,2} Thus, there is a pressing need to better understand the effects of FCOIs on both practicing oncologists and academic researchers.

In this issue of *JAMA Oncology*, Mitchell et al³ describe the prevalence of FCOIs among authors of recent National Comprehensive Cancer Network (NCCN) guidelines. They found that over 85% of NCCN guideline authors had at least 1 reported FCOI, most of which were general payments, but nearly half also received research payments. Also in this issue of *JAMA Oncology*, Boothby et al⁴ investigate FCOI disclosure among video presentations from recent American Society of Clinical Oncology (ASCO) annual meetings. They determined that the duration of speaker disclosures often exceeded the range of comprehension among most readers, questioning the effectiveness of this policy. These accompanying articles underscore the importance of further understanding FCOIs within oncology.

Although FCOIs may create a potential risk for compromised judgement among researchers and undue bias from outside commercial interests, there are also potential positive consequences associated with FCOIs. Collaboration between industry and academic researchers may facilitate the development of novel cancer therapies, a shared goal aligning the interests of industry, academia, and patients. In addition, prior work has demonstrated that FCOIs correlate with greater

prominence of research abstracts accepted for presentation at the ASCO annual meeting.¹ Whether this reflects bias in the interpretation of the research and/or that industry seeks collaboration with more prominent researchers, or vice versa, is unknown. Nevertheless, this may help explain why such a large proportion of NCCN guideline authors report FCOIs. Recruiters for both the NCCN guidelines and industry collaboration would logically seek to forge relationships with the most prominent researchers and experts in the field. However, the integrity of scientific research and maintenance of trust in the research process require ongoing and rigorous scrutiny regarding the methods for managing and/or prohibiting FCOIs.

Both ASCO⁵ and the NCCN⁶ publicly report their FCOI policies, but consensus about how best to manage or prohibit potential FCOIs is lacking. In addition, self-disclosure alone may result in an underestimation of the true prevalence of FCOIs.⁷ The reliance on self-reporting of FCOIs may now be less of a concern with the advent of the Open Payments Provision ("Sunshine Act") of the Affordable Care Act. This allows medical organizations and professional societies to create FCOI disclosure policies and use the public Open Payments database to ensure members adhere to their policies. Importantly, these FCOI policies need to be accessible, consistent, transparent, and enforceable to facilitate adherence to the policies.²

The need for comprehensible and meaningful FCOI policies among professional societies and universities is clear. Historically, the basis for most FCOI policies has relied solely on disclosure of relationships. In the modern era, in which public scrutiny of such relationships has never been higher, FCOI policies need to go beyond mere disclosure to also include management (ie, enforcement of actions such as auditing or prohibition) of relationships that are a cause for concern. For example, ASCO's FCOI policy contains requirements for general



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