

Scientific Letter

Industry Funding Among Leadership in Medical Oncology and Radiation Oncology in 2015



Stella K. Yoo, MD,^{*} Awad A. Ahmed, MD,[†] Jan Ilete,[‡]
Nicholas G. Zaorsky, MD,[§] Curtiland Deville, MD,^{||}
Emma B. Holliday, MD,[¶] Lynn D. Wilson, MD, MPH,[#]
Reshma Jagsi, MD, DPhil,^{**} and Charles R. Thomas, Jr, MD^{††}

^{}Department of Radiation Oncology, University of Southern California, Keck School of Medicine, Los Angeles, California; [†]Department of Radiation Oncology, Sylvester Comprehensive Cancer Center University of Miami Health System, Miami, Florida; [‡]New York University, New York, New York; [§]Department of Radiation Oncology, Fox Chase Cancer Center, Philadelphia, Pennsylvania; ^{||}Department of Radiation Oncology and Molecular Radiation Sciences, Johns Hopkins University School of Medicine, Baltimore, Maryland; [¶]Department of Radiation Oncology, The University of Texas MD Anderson Cancer Center, Houston, Texas; [#]Department of Therapeutic Radiology, Yale School of Medicine and Yale Cancer Center, New Haven, Connecticut; ^{**}Department of Radiation Oncology, University of Michigan, Ann Arbor, Michigan; and ^{††}Department of Radiation Medicine, Oregon Health and Science University, Knight Cancer Institute, Portland, Oregon*

Received Dec 27, 2016, and in revised form Jan 12, 2017. Accepted for publication Jan 17, 2017.

Summary

Review of 2015 records from the Open Payments database reveals that many academic oncology leaders receive consulting fees and research payments from industry in the United States, with both greater frequency and larger size of payments among medical oncology (MO) leaders than radiation oncology (RO) chairs. Such relationships can be beneficial, particularly as the distribution of funding of

Purpose: To quantify and determine the relationship between oncology departmental/division heads and private industry vis-à-vis potential financial conflict of interests (FCOIs) as publicly reported by the Centers for Medicare and Medicaid Services Open Payments database.

Methods and Materials: We extracted the names of the chairs/chiefs in medical oncology (MO) and chairs of radiation oncology (RO) for 81 different institutions with both RO and MO training programs as reported by the Association of American Medical Colleges. For each leader, the amount of consulting fees and research payments received in 2015 was determined. Logistic modeling was used to assess associations between the 2 endpoints of receiving a consulting fee and receiving a research payment with various institution-specific and practitioner-specific variables included as covariates: specialty, sex, National Cancer Institute designation, PhD status, and geographic region.

Results: The majority of leaders in MO were reported to have received consulting fees or research payments (69.5%) compared with a minority of RO chairs (27.2%). Among those receiving payments, the average (range) consulting fee was \$13,413

Reprint requests to: Charles R. Thomas, Jr, MD, Department of Radiation Medicine, The Oregon Health and Science University, Knight Cancer Institute, 3181 SW Sam Jackson Park Rd, Mail Code KP4, Portland, OR 97239. Tel: (503) 494-8756; E-mail: thomasch@ohsu.edu

S. K. Yoo and A. A. Ahmed contributed equally to this work.
Conflict of interest: none.

biomedical research shifts towards greater reliance on industry, but guidance is needed to develop consistent policies to manage financial conflicts of interest.

(\$200-\$70,423) for MO leaders and \$6463 (\$837-\$16,205) for RO chairs; the average research payment for MO leaders receiving payments was \$240,446 (\$156-\$1,234,762) and \$295,089 (\$160-\$1,219,564) for RO chairs. On multivariable regression when the endpoint was receipt of a research payment, those receiving a consulting fee (odds ratio [OR]: 5.34; 95% confidence interval [CI]: 2.22-13.65) and MO leaders (OR: 5.54; 95% CI: 2.62-12.18) were more likely to receive research payments. Examination of the receipt of consulting fees as the endpoint showed that those receiving a research payment (OR: 5.41; 95% CI: 2.23-13.99) and MO leaders (OR: 3.06; 95% CI: 1.21-8.13) were more likely to receive a consulting fee.

Conclusion: Leaders in academic oncology receive consulting or research payments from industry. Relationships between oncology leaders and industry can be beneficial, but guidance is needed to develop consistent institutional policies to manage FCOIs. © 2017 Elsevier Inc. All rights reserved.

Introduction

Financial conflicts of interest (FCOIs) among physicians have been subjected to growing scrutiny, given the increasing role of industry funding for biomedical research and concerns regarding their potential for influence. Requirements for disclosure of potential FCOIs have increased transparency.

From 2003 to 2007, the rate of annual increase of disclosed industry funding for biomedical research was 3.7% (1). In oncology, disclosure of industry funding has likewise increased in recent decades (2). Studies reporting FCOI are likely to report positive survival outcomes (3). The actual influence of FCOIs on medical scholarship and practice is unknown, but oncologists with FCOIs are more likely to

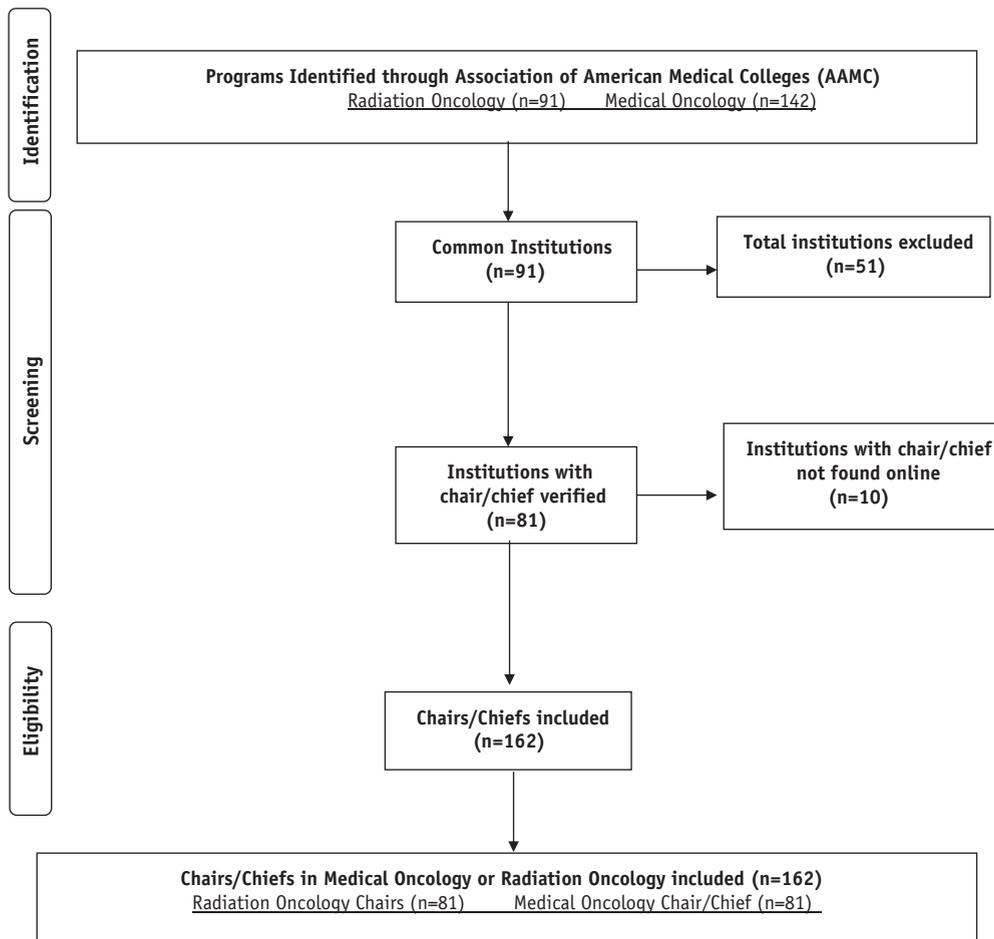


Fig. 1. Flow diagram outlining all evaluated practitioners.

Table 1 Demographics and characteristics of industry funding of academic oncology chairs and leaders

Factor	Medical oncology (n=81)	Radiation oncology (n=81)
PhD	14 (17.3%)	10 (12.3%)
Women	13 (16.0%)	7 (8.6%)
NCI	57 (70.1%)	57 (70.1%)
Number receiving consulting fee	32 (39.5%)	9 (11.1%)
Average consulting fee for cohort	\$5299	\$719
Average consulting fee among those receiving fees	\$13,413	\$6463
Minimum total consulting fees	\$200	\$837
Maximum total consulting fees	\$70,423	\$16,205
Total consulting fees	\$429,211	\$58,170
Number receiving research payment	52 (64.2%)	16 (20.0%)
Average research funds for cohort	\$154,360	\$58,289
Average research payment among those receiving payments	\$240,446	\$295,089
Minimum total research fees	\$156	\$160
Highest total research funds	\$1,234,762	\$1,219,564
Total research funds	\$12,503,191	\$4,721,430
Number receiving consulting fee or research payment	56 (69.1%)	22 (27.2%)
South	27 (33.3%)	27 (33.3%)
Northeast	21 (25.9%)	21 (25.9%)
West	13 (16.0%)	13 (16.0%)
Midwest	20 (24.7%)	20 (24.7%)

Abbreviation: NCI = National Cancer Institute.

recommend drugs marketed by companies providing funding (4), and FCOIs of physicians involved in writing practice guidelines has raised concern that practice paradigms in oncology may be influenced by industry sponsorship (5, 6).

Limited data exist regarding FCOIs of leaders of academic oncology programs, whose decisions have tremendous influence on the direction of the field. This analysis examines payments received by medical oncology (MO) and radiation oncology (RO) leaders and evaluates trends regarding potentially meaningful FCOIs.

Methods and Materials

The Association of American Medical Colleges website was accessed to identify 91 programs with both MO and RO training programs. For 10 institutions, MO departmental/division heads could not be verified and were excluded. In total, 81 RO chairs and 81 MO chairs/chiefs were included in this analysis (Fig. 1).

Two binary outcomes of interest for the year 2015 were examined: research funding (yes/no) and consulting fees (yes/no). General payments (ie, food and beverage, entertainment, gift, travel and lodging) were excluded. Binomial regression assessed whether clinician-specific characteristics such as specialty, sex, PhD status, and geography were associated with the endpoints of interest. The results of bivariable and multivariable logistic regression analyses are reported as odds ratios (OR) with 95% confidence intervals (CI), along with type 3 sum of squares *P* values (statistical significance set at *P*<.05).

Results

Table 1 shows the demographic characteristics of the analytic sample. The majority of MO heads received payment (69.1%) in the form of consulting fees (39.5%) or research payments (64.2%); a minority of RO chairs received payment (27.2%) in the form of consulting fees (11.1%) or research payments (20.0%). Figure 2 displays a histogram with count data for financial payments. The average consulting payments were \$5299 and \$719 for MO and RO, respectively. The average total research payments were \$154,360 and \$58,289 for MO and RO, respectively. Among those receiving consulting payments, the average (range) was \$13,413 (\$200-\$70,423) for MO and \$6463 (\$837-\$16,205) for RO. Among those receiving research payments, the average (range) was \$240,446 (\$156-\$1,234,762) for MO and \$295,089 (\$160-\$1,219,564) for RO.

On univariable analysis, receipt of a consulting fee (OR 6.95; 95% CI: 3.18-16.33) and MO specialty (OR: 7.17; 95% CI: 3.59-15.0) was significantly associated with receipt of research payments. When the endpoint was receipt of a consulting fee, MO specialty (OR: 5.15; 95% CI: 2.34-12.36) showed a significant positive association. Multivariable regression revealed similar results. When the endpoint was receipt of a research payment, receipt of a consulting fee (OR: 5.34; 95% CI: 2.22-13.65) and MO specialty (OR: 5.54; 95% CI: 2.62-12.18) showed a significant positive association. When consulting fees were examined as the endpoint, those receiving a research payment (OR: 5.41; 95% CI: 2.23-13.99) and those in MO

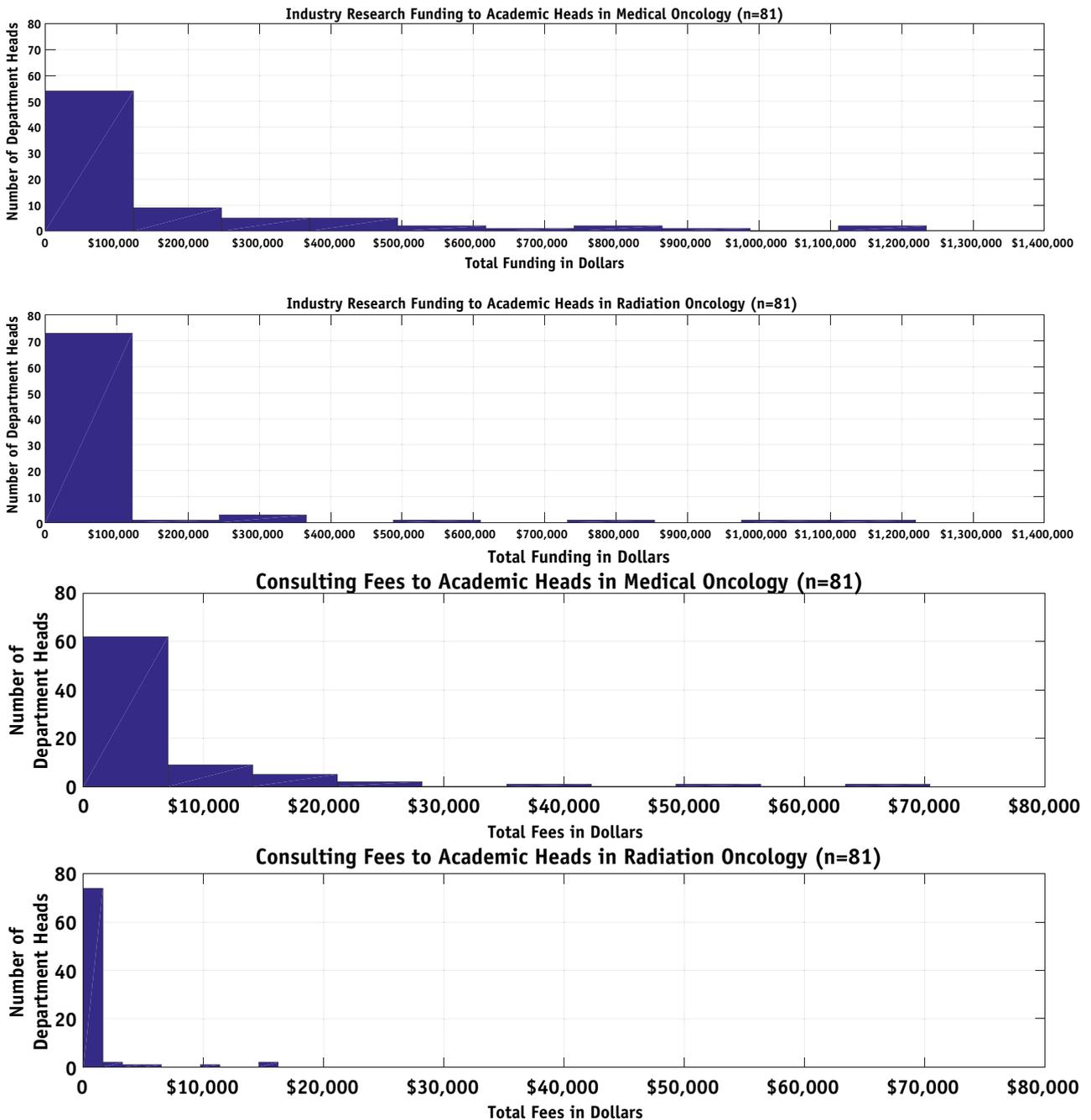


Fig. 2. Histogram of payments distribution.

(OR: 3.06; 95% CI: 1.21-8.13) were more likely to receive a consulting fee (Table 2).

Discussion

We confirm the findings of previous studies showing that MOs are more likely to have financial ties to industry than are ROs (2, 7, 8). MO leaders are more likely to receive consulting fees and research payments than are RO chairs and to receive larger amounts of money. RO, as a device-

based modality with a limited number of vendors, may naturally have fewer opportunities for financial transactions. For RO chairs, payments were concentrated among a select group, as evidenced by the greater average research fee among those receiving research fees: \$295,089 in RO versus \$240,446 in MO (Fig. 2).

Declining governmental investment in basic science research has been well documented (9, 10). With this decline, research funding by private companies has necessarily increased (11). Whereas the private sector fills a void that may lead to greater innovation, it may also influence

Table 2 Univariable and multivariable regression of receipt of any research or consulting payments reported in Open Payments database for 2015

Analysis	Odds ratio (95% CI)	P value
Univariable regression		
Endpoint: research payments (yes/no)		
Consulting fee		
No	-	
Yes	6.95 (3.18-16.33)	<.001
Specialty		
Radiation oncology	-	
Medical oncology	7.17 (3.59-15.0)	<.001
Region		
South	-	
Northeast	1.01 (0.43-2.31)	
West	1.35 (0.52-3.48)	
Midwest	1.42 (0.62-3.27)	.79
Sex		
Female	-	
Male	0.62 (0.22-1.70)	.35
PhD		
No	-	
Yes	1.06 (0.42-2.58)	.90
NCI		
No	-	
Yes	1.39 (0.70-2.80)	.35
Endpoint: consulting fee (yes/no)		
Specialty		
Radiation oncology	-	
Medical oncology	5.15 (2.34-12.36)	<.001
Region		
South	-	
Northeast	0.80 (0.30-2.07)	
West	0.52 (0.13-1.66)	
Midwest	1.54 (0.63-3.78)	.31
Sex		
Female	-	
Male	2.79 (0.74-18.19)	.19
PhD		
No	-	
Yes	1.70 (0.63-4.28)	.27
NCI		
No	-	
Yes	0.92 (0.43-2.03)	.84
Multivariable regression		
Endpoint: research payments (yes/no)		
Consulting fee		
No	-	
Yes	5.34 (2.22-13.65)	<.001
Specialty		
Radiation oncology	-	
Medical oncology	5.54 (2.62-12.18)	<.001
Region		
South	-	
Northeast	1.07 (0.40-2.86)	

(continued)

Table 2 (continued)

Analysis	Odds ratio (95% CI)	P value
West	1.64 (0.53-5.13)	
Midwest	1.32 (0.48-3.64)	.84
Sex		
Female	-	
Male	0.55 (0.17-1.72)	.29
PhD		
No	-	
Yes	0.65 (0.21-1.92)	.46
NCI		
No	-	
Yes	1.39 (0.58-3.38)	.49
Endpoint: consulting fee (yes/no)		
Research payment		
No	-	
Yes	5.41 (2.23-13.99)	<.001
Specialty		
Radiation oncology	-	
Medical oncology	3.06 (1.21-8.13)	<.02
Region		
South	-	
Northeast	0.71 (0.21-2.09)	
West	0.37 (0.08-1.42)	
Midwest	1.48 (0.52-4.27)	.25
Sex		
Female	-	
Male	5.02 (1.08-37.67)	.07
PhD		
No	-	
Yes	1.86 (0.59-5.71)	.29
NCI		
No	-	
Yes	0.93 (0.37-2.39)	.75

Abbreviations: CI = confidence interval; NCI = National Cancer Institute.

research in adverse ways. For example, research not funded by the National Institutes of Health (NIH) has the potential for underrepresentation and biased results. The law requires NIH federally funded research to include a sufficient number of minorities and women to determine whether a study may affect these groups differently than other study participants (12). In 2014, only 5.7% of all clinical trials in the United States were funded by the NIH (13); many trials are not bound by this law, and underrepresentation of certain patient groups in industry-funded clinical trials has been reported (14). Even more concerning are the potential effects of consulting fees. The influence of gifts on physicians' behavior has been firmly established (15), and relationships such as these merit enhanced scrutiny.

There are limitations to the Open Payments reporting program. The data rely on companies to report accurately and on physicians to review their individual data thoroughly (16-18), which may have an impact on the validity of our data set. The Sunshine Act is limited to physicians

and companies that reside in the United States, thereby not accounting for support from foreign companies. Although our assessment examined cohorts from both oncologic fields matched by position, it should be noted that chairs may do less consulting because they have many other obligations. Hence, our assessment of this group may underestimate the funding provided to academics in this field.

This study evaluates the most recent public data available to determine trends in potential FCOI disclosure among oncology leaders across the United States. It adds to the existing body of literature regarding the relationship between industry and physicians. The role of private industry in cancer treatment and research (5, 8, 19, 20) will likely increase as federal funding for research and health care falls. Our research reveals complex financial relationships between the private sector and leadership in oncology that is particularly prominent in MO but also not rare in RO. Department leaders set the tone and example for consulting engagement. Although certain relationships between physicians and industry can be beneficial, particularly as the distribution of funding of biomedical research shifts, there is a need for consistent guidelines to inform policies to manage FCOIs of academic oncology leaders, with particular scrutiny of modest but potentially influential consulting relationships.

References

1. Dorsey ER, de Roulet J, Thompson JP, et al. Funding of US biomedical research, 2003-2008. *JAMA* 2010;303:137-143.
2. Ahmed AA, Holliday EB, Fakhreddine M, et al. Trends in disclosures of industry sponsorship. *Int J Radiat Oncol Biol Phys* 2016;95:1093-1101.
3. Jagsi R, Sheets N, Jankovic A, et al. Frequency, nature, effects, and correlates of conflicts of interest in published clinical cancer research. *Cancer* 2009;115:2783-2791.
4. Tibau A, Bedard PL, Srikanthan A, et al. Author financial conflicts of interest, industry funding, and clinical practice guidelines for anti-cancer drugs. *J Clin Oncol* 2015;33:100-106.
5. Mitchell AP, Basch EM, Dusetzina SB. Financial relationships with industry among National Comprehensive Cancer Network guideline authors. *JAMA Oncol* 2016;2:1628-1631.
6. Choudhry NK, Stelfox HT, Detsky AS. Relationships between authors of clinical practice guidelines and the pharmaceutical industry. *JAMA* 2002;287:612-617.
7. Jairam V, Yu JB. Examination of industry payments to radiation oncologists in 2014 using the Centers For Medicare and Medicaid Services Open Payments database. *Int J Radiat Oncol Biol Phys* 2016;94:19-26.
8. Marshall DC, Moy B, Jackson ME, et al. Distribution and patterns of industry-related payments to oncologists in 2014. *J Natl Cancer Inst* 2016;108.
9. Kastner MA. The future postponed: Why declining investment in basic research threatens a U.S. innovation deficit. Massachusetts Institute of Technology, 2015. Available at: <https://dc.mit.edu/sites/default/files/Future%20Postponed.pdf>. Accessed March 21, 2017.
10. ASBMB. Unlimited potential, vanishing opportunity. Nondefense Discretionary Science Survey, 2013.
11. Tierney WM, Meslin EM, Kroenke K. Industry support of medical research: Important opportunity or treacherous pitfall? *J Gen Intern Med* 2016;31:228-233.
12. National Institutes of Health. NIH policy and guidelines on the inclusion of women and minorities as subjects in clinical research—amended, October, 2001, vol. 2016. Available at: https://grants.nih.gov/grants/funding/women_min/guidelines_amended_10_2001.htm. Accessed March 21, 2017.
13. Ehrhardt S, Appel LJ, Meinert CL. Trends in National Institutes Of Health Funding for clinical trials registered in clinicaltrials.gov. *JAMA* 2015;314:2566-2567.
14. Grady D. In cancer trials, minorities face extra hurdles. *New York Times*. December 23, 2016; A1.
15. Halperin EC, Hutchison P, Barrier RC. A population-based study of the prevalence and influence of gifts to radiation oncologists from pharmaceutical companies and medical equipment manufacturers. *Int J Radiat Oncol Biol Phys* 2004;59:1477-1483.
16. Agrawal S, Brown D. The physician payments sunshine act: Two years of the open payments program. *N Engl J Med* 2016;374:906-909.
17. Feng H, Wu P, Leger M. Exploring the industry-dermatologist financial relationship: Insight from the open payment data. *JAMA Dermatol* 2016;152:1307-1313.
18. Toroser D, Pepitone K. Two years into the sunshine act: Synopsis of opportunities, challenges, learnings, and potential implications. *Curr Med Res Opin* 2016;32:1899-1902.
19. Johnston KL, Go RS. Financial conflicts of interest among ASCO annual meeting abstract authors, speakers, and planners. *J Natl Cancer Inst* 2007;99:1415-1416.
20. Moy B, Bradbury AR, Helft PR, et al. Correlation between financial relationships with commercial interests and research prominence at an oncology meeting. *J Clin Oncol* 2013;31:2678-2684.