

# Letters

## RESEARCH LETTER

### HEALTH CARE POLICY AND LAW

#### Distribution of Industry Payments Among Medical Directors of Catheterization and Electrophysiology Laboratories From the Top 100 US Hospitals

Medical directors of cardiac catheterization (CC) and electrophysiology (EP) laboratories play an important role in the selection of devices and medications available within hospital procedural areas. This may also influence the practice patterns of their colleagues. As



Editor's Note

such, payments made from industry to medical directors of CC and EP laboratories have the potential to create conflicts of interest (COIs). The National Academy of Medicine (previously the Institute of Medicine) defines a COI as an event where “an individual or institution has a secondary interest that creates a risk of undue influence on decisions or actions affecting a primary interest,”<sup>1(p26)</sup> and notes that any payment of \$10 000 or more constitutes a significant COI.<sup>1</sup> However, to our knowledge, the extent and nature of payments to laboratory directors from top-ranking institutions has not been described previously.

The Open Payments Program (OPP) mandated that biomedical industry and group-purchasing organizations report payments to physicians and hospitals. Since August 2013, information about eligible payments has been made publicly available through the OPP website.<sup>2</sup> We used OPP data to characterize patterns of industry payments to laboratory directors at premier cardiovascular hospitals in the United States.

**Methods** | We analyzed nonresearch payment data for 2017.<sup>2</sup> We identified CC and EP laboratory directors for the top 100 US cardiovascular hospitals defined by the 2017 *US News & World Report* rankings.<sup>3</sup> We characterized the total payments made to CC and EP laboratory directors, and compared their payments with payments made to interventional cardiologists (IC) and electrophysiologists (EPs) who practiced in the same zip codes, as well as to IC and EP physicians practicing in other areas of the country. We further characterized types of financial transactions using 13 OPP-defined categories: (1) compensation for services, (2) consulting fees, (3) food and beverage, (4) travel and lodging, (5) speaking at accredited and nonaccredited continuing medical education events, (6) honoraria, (7) grants, (8) education, (9) ownership or investment interest, (10) charitable contribution, (11) entertainment, (12) royalty, and (13) gifts.<sup>2</sup> For CC and EP directors of the top 100 hospitals, we assessed the correlation of industry payments with hospitals' *US News and World Report* cardiovascular summary scores and laboratory directors' Hirsch index, a well-validated measure of an the scientific productivity of a particular author.

This study was exempt from institutional review board approval owing to the use of publicly available data that were unrelated to patients or concerns of identifiability. Stata, version 15.1 (StataCorp, LP) was used for statistical analysis;  $P < .05$  (2-sided) was considered significant.

**Results** | For 2017, directors of CC and EP laboratories affiliated with the top 100 hospitals based on *US News & World Report* rankings<sup>3</sup> received \$1 416 232 and \$2 307 504 from industry, respectively (Table 1 and Table 2). Among the 195 laboratory directors included in the study, 7 IC directors and 4 EP directors received no payments in 2017. Median (interquartile range [IQR]) payments to directors of CC laboratories were significantly higher compared with ICs (\$3203 [\$388-\$14 156] vs \$1064 [\$206-\$4104]), and payments to directors of EP laboratories were significantly higher compared with EP physicians practicing in the same zip codes (\$10 521 [\$1159-\$35 076] vs \$2900 [\$549-\$13 101]); payments for director of laboratories were also significantly higher than ICs (\$883 [\$285-\$2307]) and EP physicians (\$2267 [\$622-\$8377]) in the rest of the country. Nearly one-third of CC laboratory directors and nearly half of EP laboratory directors received payments of \$10 000 or more. Among the laboratory directors, more than one-third of payments were made for compensation for services such as speaking at dinner talks. There was variation in the types of payments to ICs and EPs, most notably in the categories of compensation for services and consulting fees. Electrophysiologists received 74% of their total payments from device manufacturers while ICs received 61% of their total payments from device manufacturers. The value of payments to laboratory directors from the top 100 hospitals poorly correlated with hospital score (IC:  $r = 0.16$ ;  $P = .11$ ; EP:  $r = 0.08$ ;  $P = .40$ ) and weakly correlated with the Hirsch index (IC:  $r = 0.06$ ;  $P = .52$ ; EP:  $r = 0.32$ ;  $P = .001$ ).

**Discussion** | Our study suggests that a large proportion of CC and EP laboratory directors have notable financial relationships with industry. To address the issue of COIs, both the Society for Cardiovascular Angiography and Interventions<sup>4</sup> and the Heart Rhythm Society<sup>5</sup> provided guidelines for interacting with industry, stating that physicians who serve on product review committees for their hospital disclose those relationships and recuse themselves from related decisions.<sup>4,5</sup> Hospitals generally have policies in place to mitigate COIs, but it is not known how the content and enforcement of these policies may vary across hospitals. Efforts to prevent the appearance of undue influence by the biomedical industry are warranted to avoid undermining public trust in the medical community. At a minimum, physicians who receive payments should be prepared to justify their interactions with industry and explain their approach to mitigating COIs. Our study has the following limitations. First, we used a systematic ap-

Table 1. Industry Payments to Interventional Cardiologists in 2017

Payment Characteristics	CC Laboratory Directors for Top-100 Hospitals <sup>a</sup> (n = 99)	ICs Practicing in Same Zip Code as Top-100 Hospitals <sup>a</sup> (n = 937)	All Other US ICs (n = 9114)
Total value, \$	1 416 232	9 442 540	49 875 572
Median (IQR) per physician, \$	3203 (388-14 156)	1064 (206-4104)	883 (285-2307)
Mean (SD) per physician, \$	14 305 (28 637)	10 077 (32 714)	5472 (23 896)
Maximum value, \$	170 418	456 684	1 126 195
Proportion of ICs receiving payments of ≥\$10 000, %	31	18	9
Type of payments, proportion of total value, %			
Compensation for services <sup>b</sup>	24	28	42
Consulting fees	35	39	17
Food and beverage	11	11	19
Travel and lodging	19	14	13
Grant	<1	1	<1
Speaking at a CME event	5	2	1
Honoraria	6	4	3
Education	0	<1	<1
Ownership or investment interest	0	0	<1
Charitable contribution	0	0	0
Entertainment	0	0	0
Royalty	0	<1	3
Gift	<1	0	<1

Abbreviations: CC, coronary catheterization; CME, continuing medical education; IC, interventional cardiologist; IQR, interquartile range.

<sup>a</sup> Based on the *US News & World Report* rankings.<sup>3</sup>

<sup>b</sup> Payments made to physicians for speaking, training, and education engagements that are not for CME, such as discussing drugs or devices with other physicians at a restaurant.

Table 2. Industry Payments to Electrophysiologists in 2017

Payment Characteristics	EP Laboratory Directors for Top-100 Hospitals <sup>a</sup> (n = 96)	EPs Practicing in Same Zip Code as Top-100 Hospitals <sup>a</sup> (n = 416)	All Other US EPs (n = 2232)
Total value, \$	2 307 504	7 314 688	27 506 722
Median (IQR) per physician, \$	10 521 (1159-35 076)	2900 (549-13 101)	2267 (622-8377)
Mean (SD) per physician, \$	24 036 (34 944)	17 583 (60 664)	12 323 (78 674)
Maximum value, \$	195 368	985 592	3 506 426
Proportion of EPs receiving payments of ≥\$10 000, %	51	30	23
Type of payments, proportion of total value, %			
Compensation for services <sup>b</sup>	38	25	32
Consulting fees	33	33	24
Food and beverage	7	7	11
Travel and lodging	19	14	13
Grant	0	2	1
Speaking at a CME event	3	1	1
Honoraria	<1	<1	1
Education	<1	<1	<1
Ownership or investment interest	<1	16	3
Charitable contribution	0	0	0
Entertainment	0	0	0
Royalty	0	1	14
Gifts	0	0	0

Abbreviations: CME, continuing medical education; EP, electrophysiologist; IQR, interquartile range.

<sup>a</sup> Based on the *US News & World Report* rankings.<sup>3</sup>

<sup>b</sup> Payments made to physicians for speaking, training, and education engagements that are not for CME, such as discussing drugs or devices with other physicians at a restaurant.

proach to identify laboratory directors but cannot exclude the possibility of misclassifications. Second, the data submitted to the OPP may have inaccuracies. However, we would anticipate that inaccuracies would not vary between laboratory directors and other clinicians.

Going forward, it will be important to understand whether biomedical industry payments to laboratory directors influences clinical decision-making within the procedural areas they oversee. Prior research has suggested that device and pharmaceutical companies target physicians in leadership roles, but

it is not known whether the presence or magnitude of payments to laboratory directors actually affects care.<sup>6</sup> With continued concerns about rising health care costs, it is important to ensure that physician decisions regarding choice of devices and other pharmaceutical therapies be driven by clinical and cost-effectiveness, not industry influence.

**Amarnath Annapureddy, MD**  
**Prasanna Sengodan, MD**  
**Shiwani Mahajan, MBBS**  
**Tulasi Annapureddy, MD**  
**Karthik Murugiah, MD**  
**Nihar R. Desai, MD, MPH**  
**Jeptha P. Curtis, MD**

**Author Affiliations:** Center for Outcomes Research and Evaluation, Yale School of Medicine, New Haven, Connecticut (A. Annapureddy, Mahajan, Murugiah, Desai, Curtis); Brody School of Medicine and Vidant Medical Center, East Carolina University, Greenville, North Carolina (Sengodan); Griffin Hospital, Derby, Connecticut (T. Annapureddy).

**Accepted for Publication:** December 10, 2019.

**Corresponding Author:** Jeptha P. Curtis, MD, Associate Professor of Medicine, Department of Internal Medicine, Section of Cardiovascular Medicine, Yale University School of Medicine, Dana 3, 789 Howard Avenue, New Haven, CT 06520 ([jeptha.curtis@yale.edu](mailto:jeptha.curtis@yale.edu)).

**Published Online:** June 17, 2019. doi:10.1001/jamainternmed.2018.8775

**Author Contributions:** Dr A. Annapureddy had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

**Concept and design:** A. Annapureddy, Desai, Curtis.

**Acquisition, analysis, or interpretation of data:** A. Annapureddy, Sengodan, Mahajan, Murugiah, T. Annapureddy, Curtis.

**Drafting of the manuscript:** A. Annapureddy, Sengodan, Murugiah, Curtis.  
**Critical revision of the manuscript for important intellectual content:** Mahajan, Murugiah, Desai, Curtis.  
**Statistical analysis:** A. Annapureddy.  
**Administrative, technical, or material support:** Sengodan, Mahajan, T. Annapureddy.  
**Supervision:** Desai, Curtis.

**Conflict of Interest Disclosures:** Dr Desai reports funding from the Centers for Medicare & Medicaid Services to develop and maintain performance measures that are used for public reporting; financial support from Johnson & Johnson, through Yale University, to develop methods of clinical trial data sharing; and research support from the American College of Cardiology Foundation. Dr Curtis reports a contract with the American College of Cardiology for a role as Senior Medical Officer, NCDR; salary support from the American College of Cardiology, NCDR; funding from the Centers for Medicare & Medicaid Services to develop and maintain performance measures that are used for public reporting; and holding equity interest in Medtronic. No other conflicts are reported.

1. Lo B, Field MJ. *Institute of Medicine Committee on Conflict of Interest in Medical Research*. Washington, DC: Education and Practice; 2009:26.
2. Centers for Medicare and Medicaid Services. Open Payments Program. <https://openpaymentsdata.cms.gov/>. Accessed March 19, 2018.
3. *US News & World Report*. Best Hospitals for Cardiology & Heart Surgery. <https://health.usnews.com/best-hospitals/rankings/cardiology-and-heart-surgery>. Accessed March 19, 2018.
4. Naidu SS, Aronow HD, Box LC, et al. SCAI expert consensus statement: 2016 best practices in the cardiac catheterization laboratory. *Catheter Cardiovasc Interv*. 2016;88(3):407-423. doi:10.1002/ccd.26551
5. Lindsay BD, Asirvatham SJ, Curtis AB, et al. Guidance for the Heart Rhythm Society pertaining to interactions with industry. *Heart Rhythm*. 2011;8(7):e19-e23. doi:10.1016/j.hrthm.2011.05.011
6. Moynihan R. Key opinion leaders: independent experts or drug representatives in disguise? *BMJ*. 2008;336(7658):1402-1403. doi:10.1136/bmj.39575.675787.651