From Disclosure to Transparency

The Use of Company Payment Data

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Background: It has become standard practice in medical journals to require authors to disclose their relationships with industry. However, these requirements vary among journals and often lack specificity. As a result, disclosures may not consistently reveal author-industry ties.

Methods: We examined the 2007 physician payment information from 5 orthopedic device companies to evaluate the current journal disclosure system. We compared company payment information for recipients of $1 million or more with disclosures in the recipients' journal articles. Payment data were obtained from Biomet, DePuy, Smith & Nephew, Stryker, and Zimmer. Disclosures were obtained in the acknowledgments section, conflict of interest statements, and financial disclosures of recipients' published articles. We also assessed variations in disclosure by authorship position, payment-article relatedness, and journal disclosure policies.

Results: Of the 41 individuals who received $1 million or more in 2007, 32 had published articles relating to orthopedics between January 1, 2008, and January 15, 2009. Disclosures of company payments varied considerably. Prominent authorship position and article-payment relatedness were associated with greater disclosure, although nondisclosure rates remained high (46% among first-, sole-, and senior-authored articles and 50% among articles directly or indirectly related to payments). The accuracy of disclosures did not vary with the strength of journals' disclosure policies.

Conclusions: Current journal disclosure practices do not yield complete or consistent information regarding authors' industry ties. Medical journals, along with other medical institutions, should consider new strategies to facilitate accurate and complete transparency.


Over the past 25 years, it has become standard practice in medical journals to require authors to disclose relationships with industry.1-3 However, the requirements vary across journals and often lack specificity. It is left to authors to determine the appropriate period for disclosure or the relevance of a financial relationship to a submitted article. As a result, disclosures may be inconsistent, with neither reviewers nor readers fully informed of the ties between authors and industry.4

We now stand on the brink of an extraordinary change. Pharmaceutical and medical device companies are publicly reporting data on physician payments. Under settlement agreements with the US Department of Justice or in an effort to improve public reputation, 15 companies are releasing information about their payments to physicians and health care organizations.5-7 Even more notably, the newly enacted health care reform legislation requires commercial health care entities to disclose gifts and payments to physicians.5 Beginning in 2013, manufacturers of pharmaceuticals, medical devices, biological products, and medical supplies must report all payments to physicians worth more than $10. The information will be publicly available and searchable online.

The industry payment data currently available provide a unique opportunity to evaluate the strengths and weaknesses of traditional disclosure mechanisms. Although some company data have been online since 2007, they have not been systematically analyzed. One important exception is a recent study that compared device company payment information with the disclosures (as printed in the program) by presenters and board and committee members at the 2008 annual meeting of the American Academy of Or-
thopecic Surgeons. The authors identified the "most notable finding . . . the high rate of nondisclosure" (29% [99 of 344]). We did not address that company’s products.\(^{12,13}\) Our preliminary analysis also indicated that this cohort accounted for the majority of the funds dispersed to individuals.

We obtained recipients’ publications in orthopedic journals or where the title indicated orthopedic content using Publication Harvester software, which uses the PubMed database to locate authors’ publications.\(^{14}\) This program allowed us to search different versions of an authors’ name to obtain as complete and accurate a list as possible. If we remained uncertain whether an article was written by the recipient in question, the institution listed in the article was matched to the city and state in the company database.

We sampled each individual’s most recent articles over the period January 1, 2008, to January 15, 2009, to ensure that the authors had received the 2007 payment of $1 million or more by the time the article appeared in print. To obtain an adequate sample of each individual’s publications while avoiding overweighting frequent publishers, we examined all articles over this period for those who published 3 or fewer articles, the 3 most recent articles for those who published 4 or 5 articles, the 4 most recent articles for those who published between 6 and 10 articles, and the 5 most recent articles for those who published 11 or more articles.

We reviewed articles’ acknowledgments, conflict of interest statements, and financial disclosures to determine whether company payments were acknowledged. We examined each article to see whether it disclosed any relationship with the company from which the author received at least $1 million and whether it provided information regarding the size of the payment. We also determined whether multiple articles by the same author consistently disclosed a company relationship, inconsistently disclosed a relationship, or never disclosed.

We assessed whether greater disclosure was associated with the strength of journals’ disclosure policies (based on the disclosure standards outlined in the Uniform Manuscript Requirements of the International Committee of Medical Journal Editors [ICMJE], in place in 2007). The ICMJE recommends that journals require authors to (1) disclose all financial relationships that might bias the work; (2) disclose all personal relationships that might bias the work; (3) state explicitly whether conflicts exist or not; (4) identify sources of funding; (5) declare what role the study sponsor had in data collection, analysis, or manuscript preparation; and (6) inform study participants of the author’s conflict of interest. We correlated the number of ICMJE policy areas a journal endorsed with the proportion of articles appearing in that journal that disclosed the author’s company relationship.\(^{15}\) We also conducted journal-level \(t\) tests to examine associations between the proportion of author-recipient disclosure in each journal and whether that journal endorsed specific ICMJE policy areas.

In addition, we explored differences in disclosure by authorship position and payment-article relatedness. For each article, we recorded the payment recipient’s rank in the list of authors (first/sole, middle, or senior). Payment-article relatedness was assessed using a method similar to that of Okike et al:\(^{16}\) articles focusing on hip or knee implants were coded as “directly related” to company payments; those involving hip or knee arthroplasty but focusing on topics other than implants (eg, surgical techniques, procedures for measuring alignment or assessing/managing anatomic variations in patients) were categorized as “indirectly related”; and articles were considered “unrelated” if they did not involve hip or knee arthroplasty.

Two coders (S.C. and a research assistant) reviewed all 95 articles so that intercoder reliability could be observed. During the coding process, each reviewer was blinded to the authors’ conflict of interest information and the codes of the other reviewer.

### RESULTS

#### DISTRIBUTION OF PAYMENTS

The 5 manufacturers, in aggregate, made 1654 direct payments in 2007, amounting to $248 million (Table 1). The mean payment to all “consultants” was $150,000, and the median was $138,500. Individuals received 985 payments totaling $184 million (81% of total funds); the mean and median were $187,000 and $175,000, respectively. Such a disparity between the mean and median values suggests that a few very high-value payments skewed the distribution. In fact, 40 individuals (38 physicians and 2 nonphysician researchers with PhDs) received at least $1 million from a single manufacturer, and 1 physician received more than $1 million from each of 2 companies. Payments to these 41 recipients ranged from $1,042,238 to $8,862,500, with a mean of $2,781,866 (median $2,187,500). This cohort received $114 million, 62% of the total funds disbursed. In effect, most of the com-
company funds went to a small minority of recipients, and these recipients became the focus for our analysis.

FREQUENCY OF DISCLOSURE

Of the 41 individuals who received $1 million or more in 2007, 32 published a total of 151 articles relating to orthopedics between January 1, 2008, and January 15, 2009. These authors published an average of 5 articles during the study period, with the most prolific author publishing 11 articles. We examined the 95 articles fitting the inclusion criteria. These articles ranged from clinical studies and literature reviews to meta-analyses and device materials evaluations.

Published disclosures of company payments varied considerably (Table 2). Fewer than half of the journal articles (n=44 [46%]) disclosed a financial relationship between the author and the orthopedic device manufacturer from which an author received at least $1 million. Only 7 of the 95 articles provided any information regarding the amount of money received; they all appeared in a single journal whose guidelines asked authors to disclose whether the company paid the author “in excess of $10,000.” An additional 3 articles in our sample appeared in this same journal, but none of them disclosed the company payment.

CONSISTENCY OF AUTHOR DISCLOSURE

To evaluate consistency among articles published by the same author, we examined the 27 authors who had more than 1 article in the sample. Four authors (15%) consistently mentioned the company name; 14 authors (52%) were inconsistent, with some articles mentioning the company and others not; and 9 authors (33%) never mentioned the company payments.

EFFECT OF JOURNAL POLICY

Articles in journals with more stringent policies were no more likely to others to reveal an author’s industry relationship (Table 3). We found no correlation between the number of 2007 ICMJE policy recommendations and the proportion of articles in that journal that disclosed a company relationship. There was no association between a journal’s endorse-
payments in question. Again, differences in disclosure among these 3 categories were not statistically significant, but combining the direct and indirect categories into a single measure of “relatedness” yielded significant results: the rate of disclosure was 50% among articles related (directly or indirectly) to company payments, compared with 11% among unrelated articles (P = .04). This finding is only suggestive or tentative, however, given the small number of unrelated cases (Table 4).

Device company data demonstrate in compelling and unprecedented fashion the inadequate transparency produced by current disclosure practices. Our findings indicate that current journal disclosure policies do not yield complete or consistent information regarding industry payments. More than half of the articles in our sample failed to acknowledge an authors’ relationship to a company. In no article could readers know how substantial the company payment to an author was. More stringent journal policies were not associated with greater transparency. Although prominent authorship position and article-payment relatedness were associated with increased disclosure, nondisclosure rates remained high: even when the recipient of company funds was the first, sole, or senior author, only 54% of the articles mentioned the company tie. Similarly, even among articles directly or indirectly related to payments, the disclosure rate was only 50%. 

There are many possible explanations for this lack of full and consistent disclosure. Journals may not solicit—or may not publish—complete financial disclosures. Authors may believe that payments from orthopedic device manufacturers are not relevant to research reports in orthopedics that do not specifically evaluate the company’s products. It is likely that both journals and authors contribute to the lack of full transparency in published articles. Determining their relative roles is a critical problem for the medical publishing community.
It occurred to us that other medical organizations might also take advantage of company disclosure data. Academic medical centers might use company-supplied data to supplement faculty’s conflict of interest statements. Pharmacy and therapeutics committees, as well as other purchasing bodies, might use these data in reviewing members’ disclosures. So too, professional medical associations might also refer to company data to examine disclosures by officers, directors, and members who help develop educational activities or formulate clinical guidelines.20 Finally, governmental bodies might compare these data with the disclosure statements of advisory committee members, study group members, and intramural and extramural researchers.

In conclusion, the availability of company data provides an unprecedented opportunity for the medical profession to move to a system of full, verifiable transparency. Medical journals, as gatekeepers of scientific knowledge, should be among the first to use company data, setting the standard for others to follow.

Accepted for Publication: July 10, 2010.
Published Online: September 13, 2010. doi:10.1001/archinternmed.2010.341
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Financial Disclosure: The Center on Medicine as a Profession (CMAP), which employs all authors, received a grant from the Institute on Medicine as a Profession (IMAP) to support this work. Dr Rothman is a board member of IMAP and has received travel reimbursements from IMAP. He is an ethics consultant (unpaid) to the North American Spine Society, and he has received small gifts and travel reimbursements connected to this consulting. He has received honoraria and travel reimbursements for lectures on conflict of interest in the field of orthopedics from the Department of Orthopedics at the University of Utah and the Spine Education Summit.

Funding/Support: This work was funded by a grant from IMAP to CMAP.

Role of the Sponsor: Dr Rothman is the President of IMAP and director of CMAP, and he had a direct role in all aspects of the study.

Additional Contributions: Patrick Moynihan, PhD, Program on Survey Research at the Institute for Quantita-
tive Social Science, Harvard University, and Victoria Raveis, PhD, Psychosocial Research Unit on Health, Aging and the Community, New York University College of Dentistry, contributed to the methodological design of this study. Dr Raveis was compensated for her work by CMAP. Frederica Stahl, BA, of CMAP provided research assistance.

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