Academic Emergency Medicine Faculty and Industry Relationships

Robert H. Birkhahn, MD, Andra L. Blomkalns, MD, Howard A. Klausner, MD, Richard M. Nowak, MD, Ali S. Raja, MD, MBA, Richard L. Summers, MD, Jim E. Weber, DO, William M. Briggs, PhD, Alp Arkun, MD, Deborah Diercks, MD

Abstract

Objectives: The authors surveyed the membership of the Society for Academic Emergency Medicine (SAEM) about their associations with industry and predictors of those associations.

Methods: A national Web-based survey inviting faculty from the active member list of SAEM was conducted. Follow-up requests for participation were sent weekly for 3 weeks. Information was collected on respondents' personal and practice characteristics, industry interactions, and personal opinions regarding these interactions. Raw response rates were reported and a logistic regression was used to generate descriptive statistics.

Results: Responses were received from 430 members, representing 14% of the 3,183 active members. Respondents were 83% male and 86% white, with 96% holding an MD degree (24% with an additional postdoctoral degree). Most were at the assistant (37%) or associate (25%) professor rank, with 51% holding at least one leadership position. Most respondents (82%) reported some type of industry interaction, most commonly the acceptance of food or beverages (67%). Respondents at the associate professor rank or higher were more likely to receive payments from industry (51% vs. 22%, odds ratio [OR] = 3.7).

Conclusions: This survey suggests that interactions between industry and academic EM faculty are common and increase with academic rank, but not with years in practice or leadership influence. The number and type of interactions are consistent with those reported by a national sampling of other physician specialties.

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The nature of the relationship between physicians and industry is complex and continues to evolve as regulations and guidelines begin to catch up with societal norms. In spite of increasing public scrutiny on the nature and impact of this association, many physicians continue to maintain open affiliations with the biomedical industry in both their academic and their clinical activities.

A recently published national survey of physicians described these interactions for clinical members of several medical disciplines; however, no published report exists with regard to emergency medicine (EM) faculty interactions with industry.[1] EM is in its infancy in the timeline of medical specialties, and industry partnerships may be more influential than in more established specialties, especially in light of the broad diagnostic and therapeutic implications of our discipline and the limited federal funding available to new investigators. Therapies initiated in the emergency department (ED) have the potential to impact outcomes and medical practices carried on long after the brief clinical encounter has ended.

Academic faculty represent a unique cohort when discussing potential conflicts of interest. Faculty have the means, access, and motive to actively shape the

From the Department of Emergency Medicine, New York Methodist Hospital (RHB, WMB, AA), Brooklyn, NY; the Department of Emergency Medicine, University of Cincinnati (ALB, ASR), Cincinnati, OH; the Department of Emergency Medicine, Henry Ford Hospital (HAK, RMN), Detroit, MI; the Department of Emergency Medicine, University of Mississippi Medical Center (RLS), Jackson, MS; the Department of Emergency Medicine, University of Michigan, Ann Arbor (JEW), Ann Arbor, MI; and the Department of Emergency Medicine, University of California, Davis Medical Center (DD), Sacramento, CA.

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Address for correspondence and reprints: Robert Birkhahn, MD; e-mail: rhbirkhahn@pol.net.

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future practice patterns of physicians-in-training through either overt action or more subtle modeling.

The purpose of this national survey of academic EM faculty was to explore the nature and extent of EM faculty–industry interactions and to identify personal, professional, and practice characteristics associated with those interactions.

METHODS

Study Design and Population

We conducted a national Web-based interactive survey using a standardized data collection instrument. Unique identifiers were not used to identify respondents and the survey design met institutional review board criteria for exemption. All active faculty members of the Society for Academic Emergency Medicine (SAEM) who provided an e-mail address for contact were eligible to participate in the study. Members were initially contacted via an e-mail containing a hyperlink to the survey tool. Follow-up e-mails requesting participation were sent weekly for 3 weeks after the initial invitation.

Survey Content and Administration

The instrument was constructed based on the report of physician–industry interactions found in the *New England Journal of Medicine* for other disciplines.[1] After the tool was constructed and adapted for use with an academic EM faculty population, it was formally tested with a focus group consisting of eight faculty members from a single institution for clarity and content. The instrument was further reviewed by representatives from 10 academic institutions (Industry Relations Committee, 2007) for external validity; modifications in syntax and grammar were incorporated. Final approval of the survey instrument was obtained from the SAEM Board of Directors prior to implementation.

The survey instrument was based on prior literature investigating the dynamics of the physician–industry relationship and modeled after the data present in the article by Campbell et al.[1] to allow a direct comparison with related medical and surgical subspecialties. The instrument collected information on respondents' personal characteristics, professional attributes, and practice characteristics, as well as their specific faculty–industry interactions.

The interactive Web collection platform was developed by the administrative offices of SAEM. The survey page was linked to an Excel (Microsoft Corp., Redmond, WA) database, and all responses were directly saved into the database on submission of the survey. The Web tool did not close the survey page at completion and submission of the page, and thus duplicate forms were sometimes submitted. The number of unique answers and a count of repeat records were calculated using a structured data cleaning algorithm contained in the R duplicated procedure.[2]

Personal and Professional Characteristics. Information was collected on respondents' gender and self-described racial identification. Respondents' professional attributes included variables collected in previous literature, as well as a select few variables specific to our cohort of academic faculty. Years in practice were collected and analyzed as a continuous variable, but reported by decadal units for simplicity and uniformity. Professional attributes of importance included the respondent's role as a peer reviewer or editor, and their involvement in clinical practice guideline development at the local or national level. Additionally, data included degrees held, leadership positions within their program, and academic rank (regardless of clinical modifiers).

Practice Characteristics. Characteristics that were used to describe respondents' practice environments included source of funding (public or private), location (urban, suburban, or rural), department or divisional status, and university affiliation. Additionally, respondents reported whether or not medical students were trained in the ED, as well as the type of residents trained in the ED.

Industry Interactions. The industry interactions measured were classified using the scheme presented by Campbell et al.[1] to allow uniformity of reporting. These were broken down into the major subheadings of drug samples, material gifts, reimbursements, and monetary payments for services rendered. All of the questions were in the yes/no format using an anchor of the preceding year for the time frame for each faculty–industry interaction. The complete instrument is available for review in Data Supplement S1 (available as supporting information in the online version of this paper).

The principal outcome measure was the percentage of respondents answering "yes" to each type of industry interaction. Respondents were classified as accepting drugs, gifts, educational reimbursements, or monetary payments if they answered yes to any of the questions within each subcategory.

Data Analysis

Logistic regression models for each outcome (e.g., accepting drug samples) were used to assess the multivariate associations between types of faculty–industry relationships and faculty gender, race, number of years in practice, practice characteristics, professional roles, highest leadership position held, professional degree classification, and academic rank. Each model only controlled for the particular variables just mentioned. As will be explained, the only predictor of interest was academic rank. Odds ratios (ORs) with 95% confidence intervals (CIs) were calculated for data presentation. Each model produced a certain OR for a positive response (such as accepting drug samples); each of these was normalized so that instructor had an odds of 1. As such, all results are relative to instructor in the same manner as the paper by Campbell et al. Therefore, the ORs presented in Table 1 are not the raw ORs directly from the output of the regression model, but are relative to instructor.

For this analysis, professional degrees were analyzed as MD only, DO only, or either MD/DO with an advanced degree. Leadership position was transformed into three categories for this analysis: senior, midlevel, or none. The "senior" classification included department or division chairs, residency directors, and

Table 1
Emergency Medicine (EM) Faculty–Industry Relationships Predicted by Academic Rank of Respondents Using Instructor as Referent Standard

Type of Faculty–Industry Relationship	Academic Rank of Respondents, OR (95% CI)				
	None	Instructor (Referent)	Assistant Professor	Associate Professor	Professor
Drug samples	1.0 (0.4, 2.4)	1.0	1.6 (0.8, 3.6)	2.7 (1.2, 6.1)	2.0 (0.8, 4.9)
Gifts	0.9 (0.4, 2.3)	1.0	0.9 (0.3, 2.1)	1.1 (0.5, 2.6)	0.9 (0.3, 2.3)
Food or beverages in workplace	1.2 (0.5, 2.9)	1.0	1.1 (0.5, 2.4)	1.2 (0.5, 2.6)	0.8 (0.3, 1.8)
Tickets to cultural or sporting events	1.3 (0.1, 30)	1.0	2.9 (0.5, 53)	7.2 (1.4, 132)	8.7 (1.6, 162)
Reimbursements	1.0 (0.4, 2.8)	1.0	1.5 (0.7, 3.8)	2.0 (0.9, 5.1)	2.3 (0.9, 6.2)
Meeting expenses (travel, food, lodging)	1.2 (0.4, 4.3)	1.0	1.3 (0.5, 4.0)	1.6 (0.6, 5.0)	2.3 (0.8, 7.7)
CME events covered	0.7 (0.2, 2.3)	1.0	1.0 (0.4, 2.7)	1.6 (0.6, 4.2)	1.5 (0.6, 4.5)
Payments	2.5 (0.7, 12)	1.0	4.4 (1.5, 19)	13.6 (4.5, 59)	10.2 (3.2, 46)
For consulting work	1.6 (0.4, 8.0)	1.0	3.5 (1.2, 15)	8.6 (2.8, 37)	7.7 (2.3, 34)
For serving as a speaker	>10*	1.0	>10*	>10*	>10*
For serving on an advisory board	2.8 (0.4, 56)	1.0	3.7 (0.7, 69)	15.0 (3.0, 273)	11.8 (2.2, 219)
Any of the above relationships	1.7 (0.6, 4.6)	1.0	1.7 (0.7, 3.8)	2.3 (0.9, 5.7)	1.4 (0.5, 3.6)

* No meaningful ORs are available because only one instructor reported payments as a speaker.
CI = confidence interval; CME = continuing medical education; OR = odds ratio.

research directors. The midlevel leadership classification included all other positions. This scheme was chosen to make the regression analysis more meaningful and to classify the possible positions with their potential to affect policy and procedure within their program. This classification was based on the highest position held, as many respondents had held more than one position within their program. Data were analyzed both raw and using the collapsed-category coding system. No difference was observed using either method, but collapsed-category data are reported for simplicity.

Model fit was assessed as is usual in generalized linear models by comparing the Akaike information criterion (AIC) against a null model containing no predictor variables. If the AIC was lower for the model with a controlling variable, it was accepted; otherwise, that particular variable was deemed not to be predictive of the outcome.

RESULTS

The membership list for SAEM for the 2007 academic year included 3,183 active faculty members. A total of 655 survey responses were received during the 3-week study period; 225 of the responses were identified as duplicate and removed from the analysis, leaving 430 unique responses for final analysis. The duplicate record analysis identified 11 people who responded to the survey four or more times, with the biggest response coming from one member who submitted a response 38 times. There was no difference in the duplicate records and the study cohort with regard to responded demographics or industry interaction percentage.

Respondents included in the final analysis were 83% male and 86% white, with 96% holding an MD degree (24% with an additional postdoctoral degree; Table 2). The respondents in our sample were younger than the cohort of American Medicine Association (AMA)

Table 2
Characteristics of Society for Academic Emergency Medicine (EM) Faculty Respondents

	Respondents	
	n/Total *N*	Percentage
Personal characteristics		
Gender		
Male	358/430	83
Race		
White	348/405	86
African American	8/405	2
Hispanic	10/405	2
Asian	26/405	6
Other	13/405	4
Professional descriptors		
Number of years in practice		
<10	195/412	47
11–19	124/412	30
20–29	70/412	17
≥30	23/412	6
Professional degree		
MD	309/429	72
DO	16/429	4
With an advanced degree (MS, MPH, MBA, or PhD)	104/429	24
Highest leadership position held		
Senior	129/430	30
Midlevel	90/430	21
None	211/430	49
Academic rank		
Professor	58/410	14
Associate professor	104/410	25
Assistant professor	153/410	37
Instructor	38/410	9
None	57/410	14
Peer reviewer for medical journal	246/430	57
Editorial board member of medical journal	98/430	23
Involved in creating clinical practice guidelines	262/430	61

Some questions were not answered by all respondents; data for complete responses are reported.

Table 3
Practice Characteristics of Society for Academic Emergency Medicine (EM) Faculty Respondents

Characteristic	Respondents *n*/Total *N*	Percentage
Primary practice location		
Urban	335/428	78
Suburban	76/428	18
Rural	17/428	4
Primary hospital		
Private	212/428	50
Public	216/428	50
ED role in hospital		
Department	368/424	87
Division	47/424	11
Neither	9/424	2
Residents trained in ED		
EM	330/423	78
Other specialty	72/423	17
Neither	21/423	5
Medical students trained in ED	413/430	96
Hospital–university relations		
Affiliated	166/389	43
Attached	191/389	49
Neither	32/389	8

Some questions were not answered by all respondents; data for complete responses are reported.
ED = emergency department; EM = emergency medicine.

physicians selected by Campbell et al. in terms of practice experience (average of 14 ± 10 years), but more rounded by academic criteria with most at the assistant professor (37%) or associate professor (25%) rank and with 51% holding at least one leadership position within their department/division (Table 2). The reported practice characteristics confirmed that most respondents trained EM residents (78%) and medical students (96%) in an urban (78%) setting, although responses were equally divided between public and private institutions (Table 3).

Most respondents (82%) reported some type of interaction with industry (Table 4), with the most common being the acceptance of food or beverages in the workplace (67%). In addition to these interactions, nearly half of the respondents (48%) reported receiving research grants in the preceding year, with almost half of those faculty (45%) being funded in part by industry. Among faculty with research grants, the amount of grant support coming from industry sources averaged 21% (95% CI = 16% to 25%).

Table 4
Frequency of Emergency Medicine (EM) Faculty–Industry Relationships According to Benefit Received

Benefit	No. of Respondents (%)
Drug samples	175 (41)
Gifts	313 (73)
Food or beverages in workplace	289 (67)
Tickets to cultural or sporting events	43 (10)
Reimbursements	126 (29)
Meeting expenses (travel, food, lodging)	76 (18)
CME events covered	89 (21)
Payments	145 (34)
For consulting work	117 (27)
For serving as a speaker	85 (20)
For serving on an advisory board	65 (15)
Any of the above relationships	353 (82)

CME = continuing medical education.

Results from our regression analysis suggest that holding a leadership position, number of years in practice, race, gender, practice attributes, and professional descriptors (with the exception of academic rank) did not influence industry interactions in our sample. Respondents at the associate professor rank or higher were more likely to receive payments as speakers, consultants, or as advisors on panels (51% vs. 22%). The breakdown of responses by academic rank with ORs ratios normalized to instructor and 95% CIs is shown in Table 1.

Regardless of academic rank, 18% of people had no relationship with industry, 25% had one type of relationship (drug samples, gifts, educational reimbursements, or payments), 30% had two types of relationships, and 18% had three. Ten percent of respondents had relationships with industry in all four categories.

DISCUSSION

Although the interaction with industry between individuals, institutions, and professional societies has come under increasing scrutiny and study, there is a long way to go before consensus is reached about the need for and appropriateness of that interaction.[3–9] Among individual practitioners, much of the attention has been paid to the attitudes and interactions of the youngest generation of physicians, especially medical students and residents.[10–16]

In parallel to the importance of industry–trainee interactions, the interaction of faculty with industry assumes a crucial role in defining the nature of all other interactions seen with academia and industry.[3,17] Faculty can directly influence the interactions that industry has with physicians-in-training, academic departments, and professional societies. Academic faculty are the thought leaders in a medical specialty; they produce practice guidelines, conduct research trials, and generate the manuscripts and editorials that help shape clinical practice. With this in mind, faculty–industry interactions should be subject to increased scrutiny because of the potential downstream effect that those interactions may have in the medical community.

The results of our current survey suggest some very strong similarities to the survey of physician–industry relations presented by Campbell et al.[1] The prior study was a national survey of fewer than 300 representatives from each of six disciplines (family practice, cardiology, internal medicine, pediatrics, surgery, and anesthesiology). The sampled cohort in that study was primarily clinical, with only 12% practicing in a university setting, although 63% of respondents worked with physicians-in-training. The respondents in the study by Campbell et al. were also older (52% were in practice for more than 20 years) but just as homogeneous as the sample

in our current study (76% male, 91% described as nonunderrepresented). This supports our belief that our sample is representative of the demographics of SAEM as a society. It also adds support to the notion that, as a whole, our academic society is young in terms of practice experience and still has a long way to go to achieve diversity across racial and gender boundaries.

There are some important contrasts worth mentioning between the current survey and the work presented by Campbell et al. First, our study sample is more active in receiving payments from industry for all activities (consulting, speaker fees, advisory fees). This is most likely attributable to the academic nature of our respondents. Second, our sample of academic EM faculty appears to be very involved with industry as a whole, but to a lesser extent than our clinical counterparts in other specialties (overall 82% vs. 94% with any interaction).

Within our study sample, increasing academic rank was the only independent predictor of any faculty–industry interaction, and this effect was most pronounced in the category of payments. It is intuitive that industry would seek the opinions and services of the most experienced faculty available. It should be of concern, however, that these senior faculty members would also be the most likely to be mentors for junior faculty and role models for physicians-in-training. This is not meant to imply that associations in and of themselves create bias; they merely represent a potential source for bias. The actual influence of these relationships on other academic and professional interactions remains to be explored. It is reassuring that leadership positions within the department/division did not influence interactions with industry in our sample.

LIMITATIONS

The most concerning aspect of our study design is the nonrandom nature of the subject selection, coupled with the low response rate from our sample. One of the initial objectives of the survey was to provide the membership of SAEM the opportunity to voice their opinions with regards to the future interaction of the Society with industry. To accomplish this goal, a selection strategy that emphasized the democratic process was chosen. The impact of this choice was to yield a survey sample that was not randomly selected and was subject to self-selection bias. Despite this obvious limitation, the balance seen in our sample with regard to academic rank, leadership positions, and type of institution and practice environment offers some reassurance as to the generalizability of our results. It is also reassuring that the number and type of faculty–industry interactions are comparable those reported in a randomly selected national sample of other medical disciplines. The low response rate is not unexpected, given the sensitivity of the topic, and the results of this survey should be interpreted in light of this limitation.

The homogeneity in race and gender present in our sample is described in other physician survey cohorts, but will likely not be representative of the Society in the future. Women in our sample have less practice experience (60% <10 years and 86% <20 years) but are advancing academically in similar percentages to their male counterparts (34% assistant and 25% associate professor, with 23% of women in our sample holding at least one senior leadership position).

CONCLUSIONS

Faculty–industry interactions are common in our sample of academic EM faculty and mirror the interactions reported for a clinical sample of physicians from other specialties. Interactions that involve the exchange of money are much more frequent in this sample and are more common with increasing academic rank.

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Supporting Information

The following supporting information is available in the online version of this paper:

Data Supplement S1. SAEM survey on physician–industry relations

The document is in PDF format.

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