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A M E R I C A N C O L L E G E O F



C H E S T

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# The Effects of Pharmaceutical Firm Enticements on Physician Prescribing Patterns\*

## There's No Such Thing as a Free Lunch

James P. Orlowski, M.D., F.C.C.P.; and Leon Wateska, R.Ph., M.S.

We examined the impact on physician prescribing patterns of pharmaceutical firms offering all-expenses-paid trips to popular sunbelt vacation sites to attend symposia sponsored by a pharmaceutical company. The impact was assessed by tracking the pharmacy inventory usage reports for two drugs before and after the symposia. Both drugs were available only as intravenous preparations and could be used only on hospitalized patients. The usage patterns were tracked for 22 months preceding each symposium and for 17 months after each symposium. Ten physicians invited to each symposium were interviewed about the likelihood that such an enticement would affect their prescribing patterns. A significant increase in the prescribing pattern of both

A number of authors have commented on the paucity or lack of objective data on the impact of pharmaceutical company marketing techniques on physician prescribing practices.<sup>1-5</sup> These marketing techniques include advertisements, printed materials, contacts by sales representatives, samples, gifts, and other gratuities. An elaborate recent enticement has been to offer an all-expenses-paid trip to an attractive resort for the physician and a significant other to attend a symposium on one of the company's drugs.<sup>5-7</sup> The actual scientific or educational component of the trip typically consumes only 3 or 4 h on each of the three or four days of the trip, leaving the remainder of the time available for social and recreational activities.

Two such symposia offered us the opportunity to assess their impact on the prescribing patterns of two drugs, both relatively new, available only as intravenous preparations, and used only in hospitalized patients. Hospital pharmacy inventory usage reports were used to track the prescribing patterns of the two drugs before and after the expense-paid trips.

### METHODS

Drug A was a new intravenous antibiotic. Physicians from our institution were invited to an all-expenses-paid trip for themselves and a guest to a luxurious resort on the West Coast.

Drug B was a new intravenous cardiovascular drug. The course was held at an island resort in the Caribbean. All expenses were paid for the physician and a significant other, including airfare, accommodations, meals, and an allowance for incidental expenses. We subsequently discovered that a similar trip had been previously offered in conjunction with a symposium on drug B at a resort in

Florida; we included its dates in our analysis, although no interviews were conducted in relation to it. Physicians who had accepted invitations to attend these symposia were identified by general questioning of colleagues. The attendees were then informally questioned about whether they felt that such an elaborate enticement influenced their prescribing of these particular drugs, as well as their general impressions regarding the propriety and ethics of these expensive and luxurious trips to learn about a new drug. Usage data on the two drugs was obtained retrospectively from hospital pharmacy inventory issue reports covering about three years. This provided usage data for these drugs for approximately 22 months before the symposia and 17 months afterward. In addition to the historical control of the use of each drug prior to the symposia, we also obtained national usage data for the two drugs for hospitals with more than 500 beds and for major medical centers (defined as having a residency program, teaching status, and a medical school affiliation) from Pharmaceutical Data Services (Hospital Data Services, Inc, Scottsdale, Ariz). Our hospital has 1,006 beds and is considered a major medical center. Our data collection stretched over three years, from 1987 through 1989. National usage data were available for only the last two years, 1988 and 1989, but these were the time periods correlating to one year before and one year after the symposia and therefore served as satisfactory trend controls. We also compared the usage of drugs A and B with the use of alternative drugs (designated drugs C and D, respectively) which drugs A and B were intended to replace. Mean, median, and standard deviation were used for descriptive statistics. Differences in usage for each drug before and after the symposia were tested using Student's t test and the Wilcoxon rank-sum test. Test selection was based upon whether the usage data conformed to the assumptions underlying the t test. The relation between dosage and time before and after the symposia was described using a linear regression model. Slope estimates were compared by constructing a 95 percent confidence interval on the difference in the slopes to assess any change in prescribing patterns. (*Chest* 1992; 102:270-73)

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### RESULTS

The majority of physicians interviewed insisted that elaborate enticements, such as an all-expenses-paid trip to a luxury resort to learn about a new drug,

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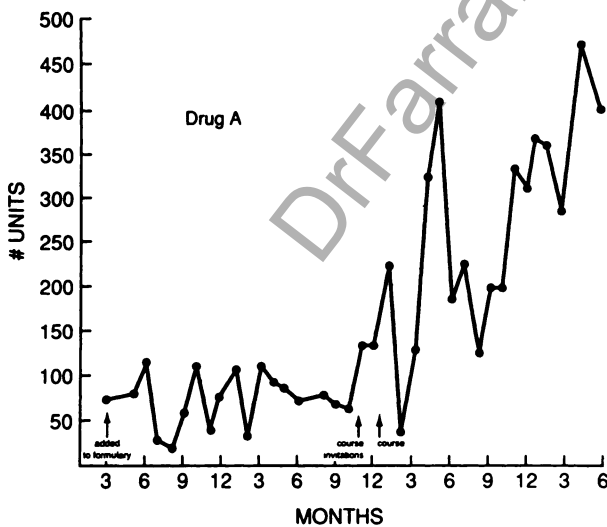
**Table 1—Responses of Physicians about the Likely Effects of Enticements on Their Drug Prescribing Patterns**

	Would Not Influence	Unlikely to Influence	Could Possibly Influence
Drug A course (n = 10)	9	1	0
Drug B course No. 2 (n = 10)	8	1	1

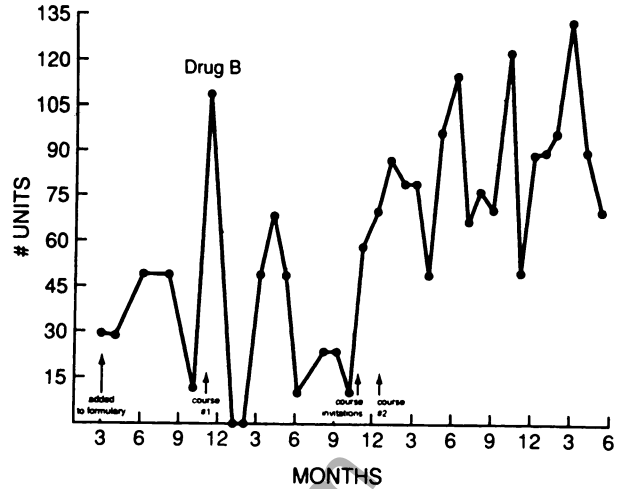
would in no way influence their prescribing decisions (Table 1). They appeared to sincerely believe that any decision to prescribe a drug is based on scientific data, clinical experience, and patient needs, rather than on promotion by pharmaceutical companies. A few physicians were not quite so absolute in their denial, and admitted that such enticements might make them think of the drug when they might not have otherwise or that the symposium might convince them that the drug had uses or benefits for their patients which they had not previously considered. No physician felt that he or she would prescribe the medication as thanks for the drug company trip.

Drugs A and B were relatively new additions to our hospital formulary. Nevertheless, we had approximately 22 months of usage data before the symposia and 17 months of data afterwards to compare. Both drugs showed a significant change in usage within a few months of each course. We also noted the time of the course invitations, since an invitation to the symposium might influence prescribing even before the course occurred.

Drug A usage showed a very significant change following the course invitations and the symposium (Fig 1). The usage of drug A had been an average of  $81 \pm 44$  units per month for the 22 months before the



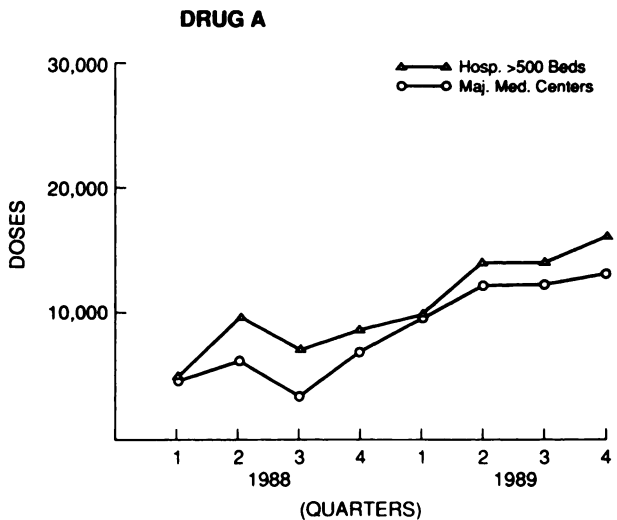
**FIGURE 1.** The number of dispensed units of drug A over 39 months of hospital use. Arrows indicate when drug was added to the hospital formulary, when course invitations arrived, and when symposium took place.



**FIGURE 2.** The number of dispensed units of drug B over 39 months. Arrows indicate the date when the drug was added to the hospital formulary and the dates of the two promotional courses.

course. Its use for the 17 months after the course averaged  $272 \pm 117$  units ( $p < 0.001$ ). The highest monthly usage of drug A before the course invitations had been 150 units. After the course, except for a single month when the use was only 39 units, its use had never fallen below 130 units per month; the peak was 476 units.

Two symposia on drug B were offered to the physicians at our institution. The first symposium occurred approximately nine months after the drug was added to our hospital formulary, and its presentation was unknown to the authors in advance. A second course was offered approximately 20 months after drug B had been added to our hospital formulary. The use of drug B for the 17 months after the second course was significantly greater ( $p < 0.001$ ) than the use before the course (Fig 2). The use of drug B before the second course had averaged  $34 \pm 30$  units per



**FIGURE 3.** National usage data for drug A in hospitals with more than 500 beds and major medical centers over 24 months. The symposium occurred during the first quarter of 1989.

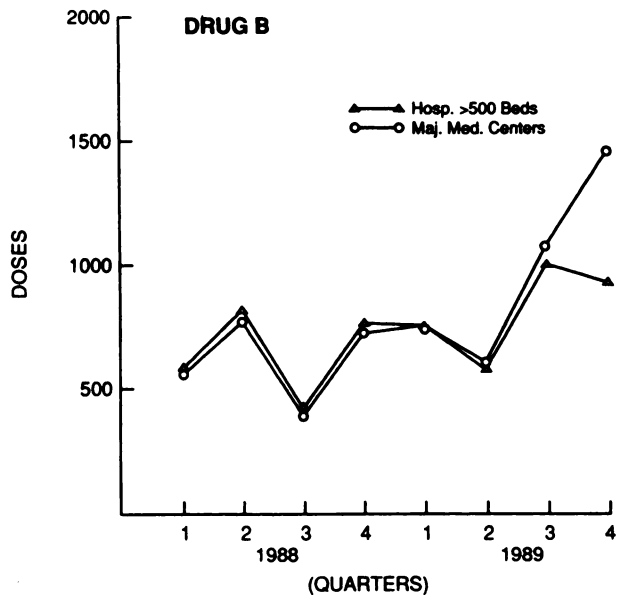


FIGURE 4. National usage data for drug B in hospitals with more than 50 beds and in major medical centers over 24 months. The second symposium occurred during the first quarter of 1989.

month, whereas the average use after the course was  $87 \pm 24$  units. The lowest monthly use of drug B after the course was 50 units with a peak of 133 units, compared with a highest use of only 70 units before the second course, except for a single peak of 110 units per month after the first course.

National usage data for hospitals with more than 500 beds and for major medical centers demonstrated at most a gradual upward trend in the use of drug A over the two years of data collection. Drug A use increased 3.5-fold over the two years (Fig 3), compared

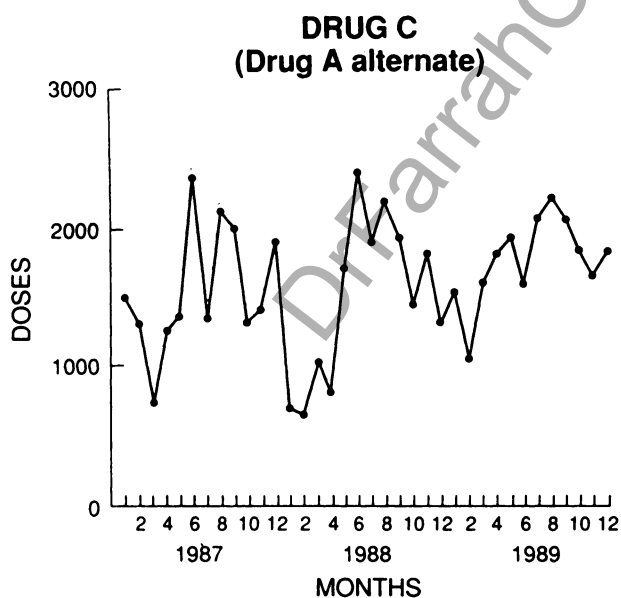


FIGURE 5. Usage data for drug C, which drug A was designed to replace. Despite wide monthly variations, which existed even before drug A was introduced, there was no evidence of a change in the prescribing of drug C.

with a tenfold increase in our institution (Fig 1) (and the slopes of the two lines were significantly different [ $p < 0.001$ ]). There was no sudden, dramatic change in usage or slope of the line.

Likewise for drug B, national usage data showed maximum increases of 2.5-fold in hospitals with more than 500 beds and 3.5-fold in major medical centers, with the pattern remaining relatively level until the last two quarters of 1989 (Fig 4). In contrast, our institution's use of drug B showed a 4.5-fold increase, with a dramatic change in slope occurring after the symposia (Fig 2). The difference in best-fit slope was also significantly different compared with national usage data ( $p < 0.01$ ).

We also compared the usage of these two drugs with the use of the alternative drugs that drugs A and B were designed to replace. Drug C was the drug A alternative, and although there were wide monthly variations in use (Fig 5), the overall trend was level, suggesting that drug A had not altered the use of drug C and that drug A had not significantly replaced drug C. Likewise, drug B was designed to substitute for drug D. Drug D also showed wide monthly variations but with no obvious trend, suggesting that drug B had not significantly impacted on the prescribing pattern of drug D (Fig 6).

#### DISCUSSION

Despite a lack of published data on the impact of

#### DRUG D (Drug B alternate)

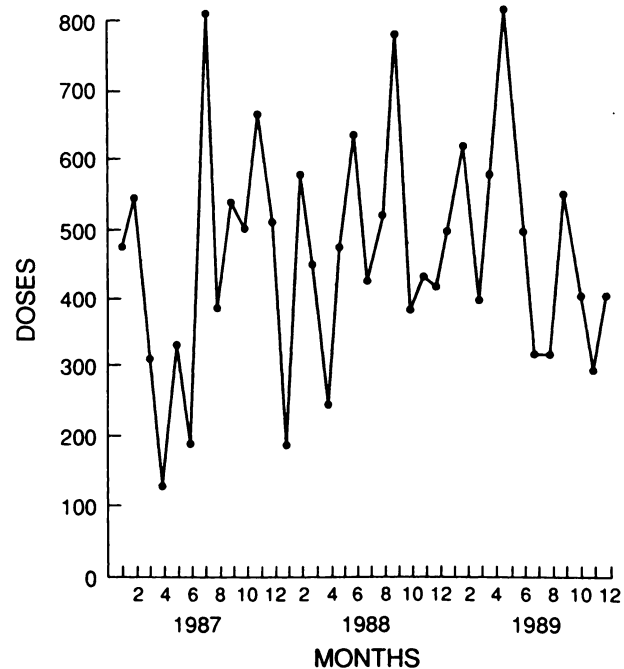


FIGURE 6. Usage data for drug D, which drug B was designed to replace therapeutically. The prescribing pattern for drug D did not change in response to the introduction of drug B, and there was no evidence that drug B was being prescribed in place of drug D.

pharmaceutical firm marketing techniques on the prescribing practices of physicians, it is unlikely that companies would spend large sums of money on marketing efforts if they were not felt to be effective. We have demonstrated that one elaborate promotional technique, the expense-paid seminar at a resort, was associated with a significant increase in the prescribing of the promoted drugs at one institution. This change occurred in spite of the physicians' belief that such inducements would not affect their prescribing patterns.

Other authors have demonstrated that physicians perceive that their prescribing of drugs is influenced predominantly by the scientific literature, but in fact commercial sources of information, such as advertisements and interactions with detail personnel, play a major role.<sup>7-10</sup> What had not been demonstrated previously was the temporal relationship between enticements and prescribing patterns. It is possible that the changes in prescribing patterns of the two drugs studied were due largely to a recognition that these new drugs were safer or more effective than their predecessors or that they filled a unique therapeutic niche. The temporal relationship to the expense-paid seminar is difficult to ignore and the two- to three-fold increase in prescribed units is impressive. There also was no discernible change in the prescribing of the alternative drugs which these new drugs were designed to replace, suggesting that the new drugs were not replacing older alternatives, but instead that the enticements were resulting in additional and perhaps excessive use.

The results of this study raise serious questions about conflicts of interest and the ethics of physician-pharmaceutical firm relationships.<sup>11-14</sup> A conflict of interest is a discrepancy between the personal interests and the professional responsibilities of a person in a position of trust. Patients have a right to expect that a service or product is recommended or prescribed because it is needed and because it is the best, most efficacious, safest, and most cost-effective, based on sound professional judgment unbiased by extraneous factors or inducements.

The physicians in this study did not feel that the largesse of an expense-paid trip to a resort to attend a seminar concerning a drug would influence their prescribing of that drug. Nevertheless, a significant and substantial increase in the prescribing of that drug occurred subsequent to the inducement. Whether a conscious or subconscious sense of obligation to reciprocate for the generosity of the pharmaceutical companies was created is not known.<sup>3</sup> Nevertheless, any real or implied obligation to promote a company's products in exchange for money, gifts, favors, enter-

tainment, or accommodations is unethical and is antithetical to the physician's responsibility as a patient advocate.

It is possible that there was a subliminal or subconscious recognition of indications for the use of these drugs which was not present prior to the symposium. Such a behavioral change would be the effect desired by the pharmaceutical companies from their promotional efforts. Likewise, pharmaceutical firms employ a multifaceted marketing approach to the promotion of their drugs, including advertisements, salesman contacts, and journal articles. The medical seminar is only one small part of this marketing mix, and our fixation on these symposia ignores the impact of these other approaches.

Regardless of what caused the change in prescribing patterns of these two drugs, it is clear that physicians need to be conscious and careful about the effects of pharmaceutical and vendor promotional efforts. Such efforts clearly influence behavior, despite our feelings to the contrary.<sup>15</sup>

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