Pharmaceutical Company Payments to Physicians

Early Experiences With Disclosure Laws in Vermont and Minnesota

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Context Recent legislation in 5 states and the District of Columbia mandated state disclosure of payments made to physicians by pharmaceutical companies. In 2 of these states, Vermont and Minnesota, payment disclosures are publicly available.

Objectives To determine the accessibility and quality of the data available in Vermont and Minnesota and to describe the prevalence and magnitude of disclosed payments.

Design and Setting Cross-sectional analysis of publicly available data from July 1, 2002, through June 30, 2004, in Vermont and from January 1, 2002, through December 31, 2004, in Minnesota.

Main Outcome Measures Accessibility and quality of disclosure data and the number, value, and type of payments of $100 or more to physicians.

Results Access to payment data required extensive negotiation with the Office of the Vermont Attorney General and manual photocopying of individual disclosure forms at Minnesota's State Board of Pharmacy. In Vermont, 61% of payments were not released to the public because pharmaceutical companies designated them as trade secrets and 75% of publicly disclosed payments were missing information necessary to identify the recipient. In Minnesota, 25% of companies reported in each of the 3 years. In Vermont, among 12 227 payments totaling $2.18 million publicly disclosed, there were 2416 payments of $100 or more to physicians; total, $1.01 million; median payment, $177 (range, $100-$20 000). In Minnesota, among 6946 payments totaling $30.96 million publicly disclosed, there were 6238 payments of $100 or more to physicians; total, $22.39 million; median payment, $1000 (range, $100-$922 239). Physician-specific analyses were possible only in Minnesota, identifying 2388 distinct physicians who received payment of $100 or more; median number of payments received, 1 (range, 1-88) and the median amount received, $1000 (range, $100-$1 178 203).

Conclusions The Vermont and Minnesota laws requiring disclosure of payments do not provide easy access to payment information for the public and are of limited quality once accessed. However, substantial numbers of payments of $100 or more were made to physicians by pharmaceutical companies.

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INTERACTIONS BETWEEN THE PHARmaceutical industry and health care professionals often involve payments: cash payments; cash-value payments, such as gift certificates; or in-kind payments, such as meals, textbooks, conference fees, or luggage. In contrast to many other professions, including education and law, medicine allows payments from a company to an individual who decides whether and how often to use products produced by the company. To avoid undue influence, the American Medical Association recommends that gifts (but not other payments) to physicians should benefit patients and not exceed $100 in value,[1] a recommendation similar to those of other medical organizations[2,3] and the Pharmaceutical Research and Manufacturers of America.[4] Other individuals have proposed eliminating all direct payments.[5,6]

Several state governments are taking an active role in monitoring payments to physicians. Currently, 5 states and the District of Columbia have laws mandating state disclosure of pay-

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ments. Minnesota's law is the oldest, enacted in 1993, whereas laws in California, Maine, Vermont, West Virginia, and the District of Columbia were all passed between 2001 and 2005.[7] In 2006, 11 additional states proposed similar legislation.[8]

In Vermont and Minnesota, payment disclosures are publicly available. The success of these laws in making payment information available to the public has not been evaluated. Moreover, the physician-specific patterns of payments in these states have not yet been described. We sought to determine the accessibility and quality of the data available in Vermont and Minnesota through their payment disclosure laws and to describe the prevalence and magnitude of disclosed payments of $100 and more. By making disclosures public, legislators allow patients and physicians to answer questions posed in the guidelines jointly offered by the American College of Physicians and the American Society of Internal Medicine.[2] When gauging the appropriateness of a payment, the guidelines suggest that physicians should ask, "What would my patients think about this arrangement? What would the public think? How would I feel if the relationship were disclosed through the media?"[2]

METHODS

Data Sources

We obtained payment disclosures for Vermont through the Office of the Vermont attorney general for July 1, 2002, through June 30, 2004. In the first year, disclosures included information regarding payment date, recipient (ie, physician, nurse, etc), payment type, purpose, value, and company disclosing the payment. In the second year, payment recipient identity, including address and professional degree, and the company representative dispensing the payment were also included. According to Vermont law, disclosures were required for payments of $25 and greater excluding pharmaceutical samples, payments related to clinical research trials, and payments supporting education-related travel and conference fees for medical students, residents, and fellows.[9]

We obtained payment disclosures for Minnesota through the State Board of Pharmacy for the period January 1, 2002, through December 31, 2004. Disclosures were available only from the original paper submission forms and included information regarding payment date, recipient identity including address and professional degree, payment purpose and value, and company disclosing the payment. According to Minnesota law, disclosures were required for payments of $100 and greater excluding pharmaceutical samples, publications, and educational materials, and gifts of $50 or greater were prohibited.[10,11]

Payment Recipient

For both Vermont and Minnesota, we first categorized the payment recipient either as an organization, such as a hospital or medical school, or as an individual. We further categorized individual recipients as physicians, including allopathic and osteopathic doctors, dentists, and podiatrists, or as nonphysicians, including nurses, physician assistants, pharmacists, and psychologists.

Payment Recipient Identity

For the second year reported by Vermont and for all Minnesota disclosure years, providing the identity of the payment recipient (ie, name and address) was required. After correcting obvious misspellings, we assigned recipients with identical first and last names the same individual identifier if 1 or more of the following other matching criteria were also identical: middle name, practice name, ZIP code, or city. For recipients where only a first initial was provided, we assigned recipients with identical last names and first initials the same individual identifier if 2 or more of the other matching criteria were also identical. Finally, we assigned recipients with identical first and last names whose other matching criteria were not identical the same individual identifier if the state's professional licensing board[12,13] listed only a single home address associated with the first and last name in question. This study was approved by the Yale University Human Investigation Committee.

Payment Type and Purpose

The Office of the Vermont Attorney General categorized the type and purpose of all payments. Payment type, or the form of payment, was categorized as book; cash, check, honoraria, or donation; food; grant; transportation or lodging; or other. Payment purpose was categorized as consulting, detailing, education, marketing, speaker, other, or unspecified or not disclosed.

For Minnesota, except for payments described as food or meals, no information specific to payment type was available. Payment purposes were not standardized but we categorized these using details described on the disclosure forms after preliminary review of the disclosures and following categorizations that were used in previous research.[14] Payment purpose was categorized as advisory board, consulting, education, research, speaker, other, or unspecified.

Statistical Analysis

For each state, we conducted a descriptive analysis that described data accessibility and quality and included data integrity, completeness of company reporting, and identification of payment recipients. Also, we used descriptive statistics to summarize payments disclosed in Vermont and Minnesota overall and by payment categorizations. We only included payments of $100 or more from either state in our primary analyses, given our interest in the prevalence of payments exceeding $100 and in order to improve the comparability of information from the 2 states since Minnesota law requires disclosure of payments of $100 and greater[10,11] and Vermont law requires disclosure of payments of $25 and greater.[9] We used Microsoft Access 2002 (Microsoft Corporation, Redmond, Wash) to create a

relational database that permitted matching and assignment of individual identifiers. Analysis was performed using SAS version 9.1 (SAS Institute Inc, Cary, NC).

RESULTS

Data Accessibility

Payment data for Vermont were released by the Office of the Vermont Attorney General as Internet-accessible annual summary reports in 2004[15] and 2005,[16] describing the prior year's disclosed payments. However, these reports did not summarize physician-specific payments; reports were aggregated by company, recipient type, payment type, and payment purpose. In order to obtain physician-specific data, we entered into extensive negotiation with the Office of the Vermont Attorney General, exchanging emails, telephone calls, and a proposal for collaboration, while Public Citizen simultaneously submitted a Freedom of Information Act[17] request. In January 2005, after nearly 12 months, physician-specific payment data for the period of July 1, 2002, through June 30, 2003, were released to our research team in a Microsoft Excel spreadsheet; data for July 1, 2003, through June 30, 2004, were released in May 2005. However, under Vermont law, companies are permitted to designate payments as trade secrets and the Office of the Vermont Attorney General withheld all information the pharmaceutical companies identified as trade secrets, allowing them to avoid the public release of all information pertaining to their disclosed payments. Public Citizen initiated a lawsuit against the Attorney General of Vermont to obtain disclosure regarding those payments designated as trade secrets; numerous pharmaceutical companies were eventually joined on the litigation. As of February 2007, 18 companies that had designated payments as trade secrets have settled, of which 13 have provided a partially redacted record of their disclosed payments either in electronic form or as hard copies and 5 have not. Litigation with several companies continues but no data obtained through litigation are included in our analyses because several companies have not yet submitted their payment records.

Payment data for Minnesota were not available as a public report. The original individual payment disclosure forms are made available at the Board of Pharmacy, filed by year, but we were required to travel to the state office in Minnesota in order to photocopy each form at a fee of $0.25 per copy. The forms were placed in their respective annual files, but had never been analyzed.

Data Quality

Data Integrity. For both Vermont and Minnesota, overall data quality varied. Whereas all Vermont disclosures had been typed and entered into a Microsoft Excel spreadsheet, some Minnesota disclosures were typed and others were hand-written (with varying degrees of legibility) by the reporting company. In both states, many individual entries described payments made to multiple physicians and/or health care professionals, whereas others described payments made to individual physicians or health care professionals. Few fields were missing information for substantial portions of the data, except payment recipient identity for Vermont. In Vermont, 951 payment entries were for an amount less than $25; in Minnesota, 344 were for an amount less than $100. In addition, for payment purpose in Minnesota, many entries were missing entirely or generically quoted the Minnesota gift disclosure law (eg, "reasonable honoraria or payment of the reasonable expenses of a practitioner . . . ").[11] Moreover, for Vermont, the definitions of payment type and purpose were vague and the purpose categories for both states were overlapping, making it difficult to differentiate between payments for contracted services vs gifts.

Completeness of Company Payment Disclosures. For Vermont, according to the summary reports released by the Office of the Vermont Attorney General (aggregated by company), 58 pharmaceutical companies disclosed $5.58 million in payments over the 2-year study period.[15,16] However, during the first year, 13 companies designated their payment disclosures as trade secrets. In the second year, 10 additional companies designated their payments as trade secrets despite having released information during the first year. In total, payments designated as trade secrets accounted for 61% of the total value for these 2 years. For example, GlaxoSmithKline, which ranked first in the first year and third in the second year in terms of total value of payments according to the attorney general's reports, designated all of its payments as trade secrets (TABLE 1). Based on the large discrepancies between the total value of publicly disclosed payments and the attorney general rankings, other companies designated some, but not all of their payments as trade secrets, including Merck and Wyeth (Table 1). Apart from trade secret designation, 7 companies disclosed payments during the second year after disclosing no payments during the first year, whereas 4 companies disclosed payments during the first year and then disclosed no payments during the second.

For Minnesota, although 60 companies disclosed payments overall, only 15 companies disclosed payments in each of the 3 disclosure years (TABLE 2). Companies disclosing the largest number or amount of payments in 1 or more years while disclosing none in another year included Amgen (529 payments totaling $4.02 million in 2003, 0 payments in 2002 and 2004), Wyeth (65 payments totaling $2.27 million in 2004, 0 payments in 2002 and 2003), and Pfizer (244 payments totaling $1.25 million in 2002, 0 payments in 2003 and 2004).

Identifying Payment Recipients. For Vermont, information identifying payment recipients was not required during the first year and was not consistently provided during the second year. Among 5983 payments publicly disclosed during the second year, 2881 (48.1%) were missing or did not dis-

close (submitting "not required" or "n/a"), or disclosed a generic, nonidentifying term for the recipient last name (ie, "doctor", "nurse", or "hcprofessional" [health care professional]). Among the remaining 3102 payments for which a recipient last name was submitted, 1601 (51.6%) did not disclose or were missing the recipient first name (submitting "not available" or "n/a"). Since both recipient first and last name were available for only 1501 (25.1%) of all publicly disclosed payments, an analysis by payment recipients in Vermont was not feasible.

For Minnesota, 97% of payments included the recipient last name, along with either a first name or first initial.

Disclosed Payments

In Vermont over 2 years, 12 227 payments totaling $2.18 million were publicly disclosed (median, $51; range, $0.22-$63 458). This amount represented only 39% of all payments reported to the state because disclosure data regarding $3.41 million were withheld on trade secret grounds. Of these publicly disclosed payments, 2826 (23%) were for $100 or more, totaling $1.76 million (1708 payments totaling $802 563 for the first year; 1118 payments totaling $954 210 for the second year; median, $184; range, $100-$63 458).

In Minnesota over 3 years, 7290 payments were publicly disclosed. Of these payments, 6946 (95%) were for $100 or more, totaling $30.96 million (2309 payments totaling $6 591 021 during 2002; 2904 payments totaling $12 960 804 during 2003; and 1733 payments totaling $11 406 036 during 2004; median, $1000; range, $100-$1 190 601).

Disclosed Payments by Payment Recipient. Of the 2826 publicly disclosed payments of $100 or more in Vermont, 2416 (85.5%) were made to physicians totaling $1 012 492; 273 (9.7%) were made to nonphysicians totaling $115 314; and 137 (4.8%) were made to organizations totaling $628 967 (TABLE 3). However, the median payment received by organizations ($1000; range, $100-$63 458) was larger than that received by physicians ($177; range, $100-$20 000) or nonphysicians ($159; range, $100-$14 648). Because of missing recipient name data, we were unable to apply our matching algorithm to physicians in Vermont.

Of the 6946 publicly disclosed payments of $100 or more in Minnesota over 3 years, 6238 (89.8%) were made to physicians totaling $22 387 285; 345 (5.0%) were made to nonphysicians totaling $1 375 581; and 363 (5.2%) were made to organizations totaling $7 194 995 (Table 3). However, as in Vermont, the median payment received by organizations ($1878; range, $100-$1 190 601) was larger than that received by physicians ($1000; range, $100-$922 239) or nonphysicians ($750; range, $100-$427 978).

After application of our matching algorithm to physicians in Minnesota, we identified 2388 distinct physician recipients, approximately 14% of the 17 445 physicians currently holding an active license who have a home address within the state.[12] The median number of payments of $100 or more received by individual physicians was 1 (range, 1-88) and the median amount received was $1000 (range, $100-$1 178 203).

Disclosed Payments to Physicians by Payment Type and Purpose. For the 2416 payments of $100 or more made to physicians in Vermont, 1631 (67.5%) were in the form of food totaling $381 455 and 589 (24.4%) were in the form of cash, check, honoraria, or donation totaling $536 508. Only 84 (3.5%) of the payments were in the form of books or grants. The largest proportions of payments of $100 or more were for education (28.4%), detailing (25.5%), and speakers (14.1%). However, the largest median payments were

Table 1. Top 15 Pharmaceutical Companies Ranked by Total Value of State Disclosures to the Office of the Vermont Attorney General and Payments Publicly Disclosed in Vermont

July 1, 2002-June 30, 2003		July 1, 2003-June 30, 2004	
Pharmaceutical Company*	Total Publicly Disclosed, $	Pharmaceutical Company*	Total Publicly Disclosed, $
GlaxoSmithKline†	0	Merck & Co Inc†	24 497
Bristol-Myers Squibb Company†	0	Amgen Inc	551 757
Merck & Co Inc†	94 563	GlaxoSmithKline†	0
Forest Pharmaceuticals Inc	258 509	Forest Pharmaceuticals, Inc	268 238
AstraZeneca†	0	Eli Lilly and Company†	0
Eli Lilly and Company	84 642	Bristol-Myers Squibb Company†	0
Aventis Pharmaceuticals	85 354	Aventis Pharmaceuticals†	0
Pfizer Inc	77 477	AstraZeneca†	0
Serono Inc	61 748	Pfizer Inc	89 370
Wyeth Pharmaceuticals	44 465	Wyeth Pharmaceuticals†	11 339
Ortho Biotech Products LP	43 080	Schering Corporation	84 642
Ortho-McNeil Pharmaceutical Inc	30 820	Novo Nordisk Inc	31 119
Sankyo Pharma Inc	21 130	Boehringer-Ingelheim Pharmaceuticals Inc	27 698
Amgen Inc	20 717	Takeda Pharmaceuticals	25 647
Schering Corporation	19 893	Sanofi-Synthelabo Inc†	0
All other companies	139 370	All other companies	74 683
Total Publicly Disclosed	**981 768**	**Total Publicly Disclosed**	**1 188 990**
Total disclosed to Office of the Vermont Attorney General	2 466 363	Total disclosed to Office of the Vermont Attorney General	3 109 524

*Data from the Office of the Vermont Attorney General; actual amount not provided by summary reports.
†Pharmaceutical company claimed payments constituted a trade secret, allowing it to avoid the release of all payment information to the public.

Table 2. Top 15 Pharmaceutical Companies Ranked by Total Payments Publicly Disclosed in Minnesota

	Total Publicly Disclosed, $			
Pharmaceutical Company by $	2002	2003	2004	2002-2004
GlaxoSmithKline	1 085 605	1 822 763	2 884 464	5 792 832
Eli Lilly and Company	1 101 845	1 564 959	1 558 869	4 225 673
Amgen Inc	0	4 017 755	0	4 017 755
Merck & Co Inc	1 247 605	1 304 458	622 918	3 174 981
Alcon Laboratories	99 994	1 431 939	1 068 123	2 600 056
Wyeth Pharmaceuticals	0	0	2 267 112	2 267 112
Pfizer Inc	1 248 827	0	0	1 248 827
Novartis Pharmaceuticals	63 468	354 870	649 600	1 067 938
3M Pharmaceuticals	325 409	175 842	484 085	985 336
OraPharma	0	309 358	457 978	767 336
AstraZeneca	629 453	0	0	629 453
TAP Pharmaceutical	0	0	417 742	417 742
CIMA Laboratories Inc	0	358 967	0	358 967
Takeda Pharmaceuticals	113 415	86 272	109 632	309 319
Abbott Laboratories	0	132 831	162 979	295 810
All other companies	675 400	1 400 790	722 534	2 798 724
Total	**6 591 021**	**12 960 804**	**11 406 036**	**30 957 861**

for speakers ($1000; range, $100-$7607) or unspecified purposes ($368; range, $100-$5000; TABLE 4).

For the 6238 payments of $100 or more made to physicians in Minnesota, 45.5% were for unspecified purposes, 26.6% were for education, and 13.1% were for speakers. However, the largest median payments were for research ($6593; range, $109-$922 239), speakers ($1430; range, $118-$154 188), consulting ($1000; range, $121-$334 180), and unspecified purposes ($1000; range, $100-$331 947; Table 4).

Disclosed Payments to Physicians by Company. In Vermont, 39 companies disclosed 2416 payments of $100 or more to physicians. The median number of these payments was 14 (range, 1-973) and the median total value of payment was $11 227 (range, $116-$331 677).

In Minnesota, 60 companies disclosed 6238 payments of $100 or more to physicians. The median number of these payments was 26 (range, 1-1205) and the median total value of these payments was $47 090 (range, $250-$5 722 498). After application of our matching algorithm to physicians in Minnesota, the median number of individual physicians to whom payments were made by each company was 18 (range, 1-569) and the median number of companies from which payments were received by each physician was 1 (range, 1-10).

COMMENT

We found that the laws enacted by Vermont and Minnesota requiring disclosure of payments from pharmaceutical companies to physicians and other health care professionals fail to provide the public with easy access to information about these payments. Moreover, the information that can be obtained is insufficient for revealing the true patterns of payments. Thus, despite extensive efforts, we were able to obtain only a limited view of the payments being made to physicians by pharmaceutical companies. In either state, individuals will have difficulty determining the number or value of payments that their physicians received from a specific company or from all companies combined.

To our knowledge, this study is the most detailed examination of payments to physicians and other health care professionals. In Vermont over 2 years, 2826 payments of $100 or more were publicly disclosed, totaling $1.76 million, whereas in Minnesota over 3 years, 6946 payments of $100 or more were publicly disclosed, totaling $30.96 million.

There are several reasons why our estimate differs from previous research that estimated $8000 to $13 000 spent by the pharmaceutical industry on each physician each year.[14,18] First, we are only able to account for payments that were publicly disclosed. Second, our estimate only accounts for payments of $100 or more. By law, companies are only required to disclose payments of $100 or more in Minnesota[10,11] and of $25 or more in Vermont[9]; in Vermont, 77% of publicly disclosed payments were for less than $100 and were not included in our analyses. Third, our estimate only accounts for the actual payments provided to physicians and does not account for the salary and benefits of the pharmaceutical representatives, their travel costs, or any other costs involved in administering and distributing payments. Finally, both state laws permit the exclusion of payments related to pharmaceutical samples and sponsorship of educational conferences, and in Vermont, no payments related to research were publicly disclosed. The retail value of pharmaceutical samples, in addition to other research and education-related expenses, account for a substantial portion of the total dollars the pharmaceutical industry estimates that it spends on promotional activities.[19]

The inaccessibility and poor quality of data in both states, due to incomplete disclosure by companies and trade secret claims in Vermont, are a response by the companies to weaknesses in the laws. Although the Vermont law specifies that the attorney general is responsible for public disclosure of payments and has authority to file a civil suit against a company not disclosing payments, the trade secret section of the legislation is written broadly, allowing companies to easily designate disclosed payments as trade secrets. By the second year, nearly 62% of payments in dollar terms were designated as trade secrets. For the Min-

nesota law, while there is no allowance for trade secret claims, neither is there mention of enforcement strategies to ensure that companies disclose payments. Remarkably, our offer to return data collected from Minnesota to state officials in electronic form for analysis and public display was declined because the State Board of Pharmacy explained that they have no role in public disclosure of this information (David Holmstrom, executive director, State Board of Pharmacy, oral communication, 2005).

In order to strengthen disclosure legislation related to pharmaceutical company payments to physicians, particularly for states currently considering enacting similar proposals, there should be no trade secret exemption for payment disclosures and an agency within the state needs to be specified and provided sufficient enforcement power, either via penalties or fines. Penalties could include suspending interactions between physicians and pharmaceutical companies for periods of time or possible exclusion of products for which there is a satisfactory alternative from Medicaid or state and county hospital formularies. Moreover, this agency with enforcement power should be given the responsibility of collecting and making the data available to the public in an understandable manner. Disclosure forms should be available to companies electronically, ideally with mechanisms to standardize entries and minimize missing information. In addition, the information should be made available online to the public and structured to allow online queries of payments received by individual physicians from pharmaceutical companies.

Although all payments included in our primary analyses were of $100 or more, we were unable to determine the proportion of these payments of $100 or more that were within American Medical Association guidelines. In fact, due to the categorization of payments by the Vermont Attorney General and the vague language used in Minnesota, we were often unable to determine with any certainty the true purpose of the work that led to the payment, making it impossible to differentiate payment for contracted services from gifts.

Payments for research, consulting, or advisory boards may be more appropriate than those described simply as honoraria or detailing. However, any payment to an individual of $100 or more in the form of food clearly violates the $100 guideline.[1] In Vermont, nearly 68% of payments of $100 or more to physicians, 1631 payments totaling $381 455, were for food; in Minnesota, although payment type was not

Table 3. Publicly Disclosed Payments of $100 or More From Pharmaceutical Companies to Health Care Organizations and Professionals

	Vermont*			Minnesota†		
Recipients	No. of Payments (% of Total)	Amount Paid, $ (% of Total)‡	Payment, Median (Range), $	No. of Payments (% of Total)	Amount Paid, $ (% of Total)‡	Payment, Median (Range), $
Physicians	2416 (85.5)	1 012 492 (57.6)	177 (100-20 000)	6238 (89.8)	22 387 285 (72.3)	1000 (100-922 239)
Organizations	137 (4.8)	628 967 (35.8)	1000 (100-63 458)	363 (5.2)	7 194 995 (23.2)	1878 (100-1 190 601)
Nonphysicians	273 (9.7)	115 314 (6.6)	159 (100-14 648)	345 (5)	1 375 581 (4.4)	750 (100-427 978)
Overall	**2826**	**1 756 773**	184 (100-63 458)	**6946**	**30 957 861**	1000 (100-1 190 601)

*Payments in Vermont made between February 1, 2002-June 30, 2004.
†Payments in Minnesota made between January 1, 2002-December 31, 2004.
‡Percentages may not sum to 100 because of rounding.

Table 4. Publicly Disclosed Payments of $100 or More From Pharmaceutical Companies to Physicians by Payment Purpose

	Vermont*			Minnesota†		
Recipients	No. of Payments (% of Total)	Amount Paid, $ (% of Total)‡	Payment, Median (Range), $	No. of Payments (% of Total)	Amount Paid, $ (% of Total)‡	Payment, Median (Range), $
Advisory board§				309 (5.0)	601 166 (2.7)	816 (102-76 350)
Consulting	84 (3.5)	52 013 (5.1)	250 (100-5000)	259 (4.1)	1 046 319 (4.7)	1000 (121-334 180)
Detailing‖	616 (25.5)	137 694 (13.6)	158 (100-2703)			
Education	686 (28.4)	170 389 (16.8)	132 (100-20 000)	1659 (26.6)	4 573 747 (20.4)	500 (100-123 436)
Marketing‖	218 (9.0)	51 070 (5.0)	135 (100-7230)			
Research§				126 (2.0)	3 517 203 (15.7)	6593 (109-922 239)
Speaker	341 (14.1)	351 659 (34.7)	1000 (100-7607)	818 (13.1)	2 675 551 (12.0)	1430 (118-154 188)
Other	76 (3.2)	46 282 (4.6)	153 (100-3477)	227 (3.6)	600 577 (2.7)	480 (100-65 978)
Unspecified	395 (16.4)	203 385 (20.1)	368 (100-5000)	2840 (45.5)	9 372 722 (41.9)	1000 (100-331 947)
Overall	**2416**	**1 012 492**	177 (100-20 000)	**6238**	**22 387 285**	1000 (100-922 239)

*Payments in Vermont made between February 1, 2002-June 30, 2004.
†Payments in Minnesota made between January 1, 2002-December 31, 2004.
‡Percentages may not sum to 100 because of rounding.
§Category applicable only for Minnesota.
‖Category applicable only for Vermont.

typically disclosed, at least 164 payments totaling $25 685 were for food. It is safe to conclude that there were large numbers of payments made to physicians by pharmaceutical companies in violation of the $100 guideline. Moreover, if any publicly disclosed payments in Minnesota were in fact gifts, these would have been in violation of Minnesota's ban of gifts to physicians exceeding $50.[11]

Full disclosure would better allow the public to appreciate the relationship between industry and the health care profession and fulfill the aim of the American College of Physicians and the American Society of Internal Medicine[2]: for physicians to consider how patients and colleagues would assess the financial relationship. The medical community needs to address the impact of receiving payments, both in terms of their known effect on prescription writing[20,21] and formulary requests,[22] and also in terms of the erosion of public trust. Physicians admit that their colleagues may be influenced by pharmaceutical payments, although they are less likely to admit being influenced themselves.[23]

Given the conflict of interest in relying on physicians to determine payment appropriateness and the variation among physicians as to what they believe is appropriate, legislation requiring disclosure of payments remains a reasonable initial policy. However, given the significant problems we encountered attempting to gain access to and analyze Vermont and Minnesota payment disclosure data, requiring disclosure of payments may not be the singular and most effective means of minimizing the undue influence of companies over the medical profession. Both Iowa and Massachusetts, which are considering legislation similar to that enacted by Vermont and Minnesota, have recently proposed a complete ban on gifts to health care professionals from pharmaceutical companies.

Our study is the first to examine the effectiveness of state disclosure legislation at achieving access to information about payments from the pharmaceutical industry to physicians. However, there are several considerations in interpreting its results. First, our study is limited to the experiences of only 2 states with relatively small numbers of physicians, and which may not be generally representative. It is important to learn from the experiences of these states to improve the effectiveness of subsequent legislation enacted by other states. Second, we are limited in our ability to directly compare payment patterns in Vermont and Minnesota, because each state's legislation has different inclusion and exclusion criteria for payments. For instance, Vermont did not require payments related to clinical trial research, presumably resulting in lower median payments. Finally, our analysis was limited by the quality of the obtainable data, which were variously nonstandardized, inconsistently reported, or withheld on trade secret grounds. This likely led to significant underestimates of the total number and value of payments in both states and precluded any assessment of payment patterns over time. This limitation is also one of our central findings: the impact of disclosure laws on increasing transparency of physician-industry relations is compromised by incomplete disclosure as well as insufficient access to disclosed information. Making these payments publicly available will require more stringent laws with clear mechanisms for enforcement.

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Study concept and design: Ross, Lackner, Lurie, Gross, Wolfe, Krumholz.
Acquisition of data: Lackner, Lurie, Krumholz.
Analysis and interpretation of data: Ross, Lackner, Lurie, Krumholz.
Drafting of the manuscript: Ross, Lackner.
Critical revision of the manuscript for important intellectual content: Ross, Lackner, Lurie, Gross, Wolfe, Krumholz.
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Wherever there is an enforced orthodoxy—or even two orthodoxies, as often happens—good writing stops.
—George Orwell (1903-1950)