Family Physicians and Generic Drugs: A Study of Recognition, Information Sources, Prescribing Attitudes, and Practices

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A survey of a national sample of family physicians was undertaken to investigate several aspects of attitudes and prescribing patterns related to generic drugs. Questionnaires were returned by 317 of 501 eligible respondents for a response rate of 63.3 percent. Of the respondents, 62.5 percent said they had enough confidence in generic drugs to prescribe them in their practices, but only 26.9 percent said they actually prescribed mostly generics. Respondents were also asked to indicate the relative importance of several potential sources of information on new drugs and to test their ability to recognize a list of generic and trade name drugs. Several associations were identified between physicians' sources of drug information and generic drug recognition, attitudes, and prescription patterns. The habit of prescribing mostly generic drugs, for example, was found to be more common among family physicians who were residency trained, who relied least on drug company representatives, and who were regular readers of the New England Journal of Medicine. *The ability to recognize all ten generic names was found to be highest among these same groups of physicians and also among those who relied least on journal advertisements and those who were regular readers of* The Medical Letter.

Decisions governing the use of prescription drugs, amounting to a national expenditure of approximately $14.5 billion in 1982,[1] lie predominantly in the hands of practicing physicians. Public expectations and professional ethics maintain that physicians' prescribing decisions should be made through an unbiased assessment of drug efficacy, safety, and cost. Such decisions, however, depend on the particular knowledge, beliefs, and attitudes possessed by individual physicians.[2–4] Physicians' decisions on the prescription of generic drugs, which offer the potential of large cost savings to patients, are subject to a variety of influences. While virtually all states have laws that allow, encourage, or require pharmacists to substitute generic for brand name drugs, the choices of individual physicians still have considerable effect on prescription drug selection and costs.

Representatives of the Food and Drug Administration (FDA), entrusted with product safety, aver that all approved drugs are safe and effective and that all manufacturers are exposed to rigorous evaluation to ensure safety.[5–7] In addition, the publication of the FDA document, *Approved Drug Products with Therapeutic Equivalence Evaluations,*[7] based on judgments about bioequivalence as well as efficacy and safety, promotes the safe interchangeability of listed drugs. *The Medical Letter* has recently reviewed generic safety and has implied approval of new generic products.[8]

This study was undertaken to assess the factors that affect the generic drug-prescribing habits of family physicians, including sources of information about drugs, attitudes held, and basic knowledge of generic products.

METHODS

A one-page questionnaire was mailed in an initial mailing and two follow-up mailings in the fall of 1984 to 575

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TABLE 1. DEGREE OF RELIANCE ON VARIOUS SOURCES OF INFORMATION ON NEW DRUGS

Source of Information	Degree of Reliance: A Great Deal No. (%)	Some No. (%)	Not at All No. (%)	Total No. (%)
Articles in journals	144 (47.2)	153 (50.2)	8 (2.6)	305 (100.0)
Advertisements in journals	26 (9.1)	176 (61.3)	85 (29.6)	287 (100.0)
Drug company representatives	96 (31.9)	182 (60.5)	23 (7.6)	301 (100.0)
Recommendations from colleagues	135 (45.5)	151 (50.8)	11 (3.7)	297 (100.0)

family physicians selected at random from the directory of the American Academy of Family Physicians (AAFP).[9] The questionnaire elicited information on background and demographic characteristics of the sample physicians, their prescribing practices (whether mostly by trade or generic names), the degree to which they relied on various sources of information on prescription drugs, their degree of confidence in generic drugs, and their journal reading habits. The questionnaire also included a list of 20 drugs, distributed evenly between generic and trade names, selected from a published list of 200 most commonly prescribed medications.[10] Respondents were asked to indicate whether they recognized each drug or used it in their practice.

RESULTS

Response Rate and Sample Characteristics

Of the 575 questionnaires mailed out, 74 were returned as not deliverable for such reasons as a change of address, leaving 501 eligible respondents. Completed questionnaires were returned by 317 respondents for an adjusted response rate of 63.3 percent. A comparison of respondent characteristics with those of the AAFP membership showed that the survey respondents were slightly older but more likely to be board certified. Forty-four percent of respondents and 38 percent of AAFP members graduated from medical school prior to 1962. Seventy-eight percent of respondents and 67 percent of AAFP members are board certified. While these differences are statistically significant ($P < .05$), they should not substantially affect the conclusions of this study.

Sources of Information

The degree to which respondents said they relied on various sources for information on new drugs is displayed in Table 1. Respondents indicated that their most important sources of information on new drugs are journal articles and recommendations from colleagues, with almost one half of respondents indicating that they rely "a great deal" on these sources. Advertisements in journals are reported to be the least important source of information, with almost 30 percent of respondents saying they do not rely on journal advertisements at all. Over 90 percent of respondents indicated that they rely to some extent on information from drug company representatives. It should also be mentioned, in connection with drug company representatives, that 93 percent of respondents indicated that they use drug samples in their practices.

The percentages of respondents who indicated that they regularly read each of six selected journals listed on the questionnaire were *American Family Physician* (77 percent), *The Journal of Family Practice* (55 percent), *The Medical Letter* (51 percent), *JAMA, The Journal of the American Medical Association* (49 percent), *New England Journal of Medicine* (26 percent), and *Lancet* (4 percent).

Forty-two percent of respondents said that they regularly read two or fewer of these journals, 51 percent read three or four, and 7 percent read five or six. There was a statistically significant relationship ($P < .05$) between the degree of reliance on journal articles for information and the number of journals read.

Confidence in Generic Drugs

Sixty-three percent of respondents replied affirmatively to the question, "Do you have enough confidence in generic drugs to prescribe them regularly to your patients?" The proportion of family physicians with such confidence in generic drugs was higher among the younger and residency-trained family physicians than it was among their older and nonresidency trained counterparts (Table 2). No statistically significant differences in confidence in generic drugs were found according to board certification status, usual sources of information on new drugs, or journals read.

Prescription of Generic Drugs

Twenty-seven percent of all respondents indicated that they prescribed mostly generic drugs. This practice was highest (38 percent), however, among family physicians who had graduated from medical school after 1971. It was also higher among the residency-trained and board-

TABLE 2. PRESCRIBING OF GENERIC DRUGS AND CONFIDENCE IN GENERIC DRUGS BY SELECTED PHYSICIAN CHARACTERISTICS

	Prescribe Mostly Generic Drugs No. (%)	Have Confidence in Generic Drugs No. (%)
Medical school graduation year		
1972 to 1981	44 (37.6)	89 (74.8)
Before 1972	34 (19.8)*	97 (55.1)
Residency training		
Yes	51 (36.4)	100 (70.4)
No	27 (17.9)*	87 (56.5)*
Board certification		
Yes	73 (32.4)	151 (65.1)
No	6 (8.8)*	37 (56.1)
Reliance on journal advertisements		
"Some or not at all"	71 (28.4)	161 (63.1)
"A great deal"	4 (15.4)	17 (68.0)
Reliance on drug company representative		
"Some or not at all"	65 (33.2)	128 (64.3)
"A great deal"	11 (11.8)*	54 (56.8)
Journals read		
American Family Physician		
Readers	59 (25.4)	146 (61.1)
Nonreaders	20 (32.3)	42 (67.7)
The Medical Letter		
Readers	48 (31.8)	104 (67.5)
Nonreaders	31 (21.7)	84 (57.1)
New England Journal of Medicine		
Readers	29 (37.2)	54 (68.4)
Nonreaders	50 (23.2)*	134 (60.4)
Total group	79 (26.9)	188 (62.5)

** Difference between groups statistically significant ($P \leq .05$) based on chi-square test*

certified physicians than among their nonresidency-trained and non-board-certified counterparts. Only 9 percent of non-board-certified family physicians, in fact, indicated that they write mostly generic prescriptions.

The characteristics of recent medical school graduation, residency training, and board certification tend, of course, to be highly correlated among family physicians. Whereas 87 percent of those in the sample graduating after 1971 are residency trained, only 20 percent of earlier graduates did family practice residencies. Similarly, 89 percent of those graduating after 1971, but only 69 percent of those graduating earlier, are board certified. Board certification and residency training also have a high statistical association. These correlations make it impossible to assess the independent effects of each of these variables, but it is clear that the younger, residency-trained, board-certified family physicians have different generic prescribing habits than the older, nonresidency-trained, non-board-certified family physicians.

Family physicians who relied least on drug company representatives were most likely to prescribe mostly generic drugs. Writing generic prescriptions was the practice of only 12 percent of those who said they relied "a great deal" on drug company representatives. The only journal whose readers had a statistically significant greater likelihood of prescribing generic drugs was the *New England Journal of Medicine.*

Drug Recognition

Overall, 63 percent of the respondents indicated recognition of all the generic drugs listed on the self-assessed questionnaire (Appendix). This response created an extremely skewed distribution to this item and necessitated the dichotomization of this variable between those who had perfect recognition of the generic drugs and those with less than perfect recognition.

In spite of this limitation, a number of statistically significant relationships were revealed. More recent medical school graduates, physicians with residency training, and physicians who are board certified indicated a greater ability to recognize all ten generic drugs (Table 3). Respondents recognizing all ten generic drugs also tended to be those who relied less than "a great deal" on journal

TABLE 3. RECOGNITION OF GENERIC AND TRADE NAME DRUGS BY SELECTED PHYSICIAN CHARACTERISTICS

	Recognize All Ten Generic Drugs No. (%)	Recognize All Ten Trade Names No. (%)
Medical school graduation year		
1972 to 1981	95 (77.9)	112 (91.8)
Before 1972	95 (52.3)*	149 (82.3)*
Residency training		
Yes	107 (73.3)	132 (90.4)
No	86 (54.4)*	131 (82.9)
Board certification		
Yes	164 (68.9)	209 (87.8)
No	30 (43.5)*	55 (79.7)
Reliance on journal advertisements		
"Some or not at all"	176 (67.4)	231 (88.5)
"A great deal"	10 (38.5)*	18 (69.2)*
Reliance on drug company representatives		
"Some or not at all"	142 (69.3)	179 (87.3)
"A great deal"	49 (51.0)*	81 (84.4)
Journals read		
American Family Physician		
Readers	157 (64.1)	212 (86.5)
Nonreaders	39 (54.2)	54 (75.0)*
The Medical Letter		
Readers	114 (71.3)	145 (90.6)
Nonreaders	82 (52.2)*	121 (77.1)*
New England Journal of Medicine		
Readers	58 (71.6)	68 (84.0)
Nonreaders	138 (58.5)*	198 (83.9)
Total group	190 (62.7)	261 (86.1)

** Difference between groups statistically significant ($P \leq .05$) based on chi-square test*

advertisements or drug company representatives for information on new medications. Family physicians who said that they regularly read either of two journals—*The Medical Letter* or the *New England Journal of Medicine*—were also more likely to recognize all ten generic prescription names.

Respondents' ability to recognize all ten generic drugs decreased with length of time since medical school graduation. While 78 percent of those graduating in the 1972 to 1981 decade recognized all ten generic drugs, the corresponding percentages for other respondents were 1962 to 1971, 64 percent; 1952 to 1961, 57 percent; and prior to 1952, 38 percent. Recognition of all ten trade name drugs, while also associated with recency of medical school graduation, did not fall off so greatly. Ninety-two percent of those graduating in the 1971 to 1981 decade recognized all ten trade names. Corresponding percentages for the other time periods were 1962 to 1971, 85 percent; 1952 to 1961, 89 percent; and prior to 1952, 72 percent.

DISCUSSION

This study is subject to all of the limitations that apply to mail surveys. While the response rate in this study is respectable by most standards, it is possible that there are significant differences between respondents and nonrespondents with respect to the variables studied. The most important limitation is probably the study's dependence on respondents to test their own abilities to recognize the names of prescription drugs. While this measure of drug recognition is undoubtedly subject to some distortion, some indication of validity is provided by drug-recognition ability being correlated with expected variables such as with residency training.

Judging from the proportion of family physicians who said that they recognized all ten generic drugs on the questionnaire, knowledge of generic drugs among these respondents certainly appears to be greater than was anticipated when the questionnaire was designed. Whether the ten generic drugs listed were too "easy" is a matter for conjecture. One of the strongest relationships exhibited in the data consists of differences in generic prescription knowledge and practice between the younger, residency-trained and the older, nonresidency-trained family physicians. The younger, residency-trained physicians showed greater confidence in generic drugs, indicated greater recognition of generic names, and reported more frequent incorporation of generic prescribing into their practices. They also reported that they relied less on drug company representatives as sources of information. Whether these differences reflect contrasts in the kind of training received by these family physicians or whether these differences

are a product of aging and experience in that the present younger group will gradually become more like the older group as it matures cannot be determined from the data.

The other strong relationship revealed is between the sources of information used by physicians, their ability to recognize generic drug names, and their prescribing of generic drugs in their practices. Respondents who said that they relied a great deal on drug company representatives for information had a relatively impaired ability to recognize all ten generic names and were much less likely to prescribe generic drugs in their practices. Physicians who said that they relied a great deal on advertisements in journals were also less likely to recognize all ten generic names on the list.

One other finding that deserves mention is that 37 percent of survey respondents said they did not have enough confidence in generic drugs to prescribe them regularly.

That two thirds of respondents chose to write prescriptions using trade names in the face of large potential savings to their patients implies that these family physicians take factors other than cost into consideration. One factor, not sufficiently measured by the survey, may be individual beliefs about the bioequivalence of alternate pharmaceutical products. While the Food and Drug Administration publication, *Approved Drug Products with Therapeutic Equivalence Evaluations,*[7] takes bioequivalence as well as safety and efficacy into account in its equivalence evaluations, some physicians may still question the basis of these judgments. A second factor may be the comparative ease of remembering trade name product labels compared with the more complex and obscure generic designations—a fact that may argue for the adoption of a generic labeling system that would facilitate their use.

The survey results showed a consistent association between pharmaceutical company influences on physicians' information (through advertisements or drug representatives) and physicians' ability to recognize generic names, attitudes toward generic products, and use of generic prescriptions. This finding suggests the possibility of a more subtle but important influence on physician preferences for trade name drugs. While the generic substitution laws passed by states allow various possibilities for circumventing or negating the reticence of some physicians to prescribe generic preparations, such legislative approaches fail to address the professional ethical issues raised by some of the results of this study.

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APPENDIX

Trade Name and Generic Drugs Listed on the Questionnaire

Trade Name	Generic Name
Synthroid	Diphenhydramine HCl
Dimetapp	Flurazepam
Indocin	Sulindac
Keflex	Phenytoin
Isordil	Chlorthalidone
Darvon	Methyldopa
Amoxil	Chlorpropamide
Lopressor	Propranolol
Imodium	Amoxicillin
E.E.S.	Cimetidine