

Consumers' Reports On The Health Effects Of Direct-To-Consumer Drug Advertising

This study found no widespread adverse health effects resulting from drug ads aimed at consumers, but society still needs to weigh in on the consequences of this advertising.

by Joel S. Weissman, David Blumenthal, Alvin J. Silk, Kinga Zapert, Michael Newman, and Robert Leitman

ABSTRACT: We conducted a national telephone survey about health care experiences associated with direct-to-consumer advertising (DTCA) of prescription drugs. Among the 35 percent of our sample who had a physician visit during which DTCA was discussed, 25 percent received a new diagnosis, of which 43 percent were considered high priority according to authoritative sources. More than half also reported actions taken by their physician other than prescribing the advertised drug. Despite concerns about DTCA's negative consequences, we found no differences in health effects between patients who took advertised drugs and those who took other prescription drugs.

UNTIL JUST A FEW YEARS AGO advertising of prescription drugs was aimed almost exclusively at physicians and other health professionals. Although physician drug detailing (in-person visits by drug company representatives) has been criticized for exerting undue influence on prescribing habits, physicians' training and experience equip them, at least in theory, to process and evaluate advertisers' claims and make informed prescribing decisions for their patients.¹ The near-exclusive focus on physicians changed in the late 1990s, when the pharmaceutical industry increased its use of direct-to-consumer advertising (DTCA). Although modest at first, spending on DTCA more than doubled to approximately \$2.5 billion in 2000 following the relaxation of regulations from the U.S. Food and Drug Administration (FDA) in 1997.²

The practice of DTCA is controversial because it operates at the nexus of health

Joel Weissman is an associate professor in the Department of Medicine, Harvard Medical School, where David Blumenthal is a professor. Weissman and Blumenthal are also members of the Department of Health Care Policy, Harvard Medical School, and the Institute for Health Policy, Massachusetts General Hospital, all in Boston. Alvin Silk is the Lincoln Filene Professor Emeritus, Graduate School of Business Administration, Harvard University. Kinga Zapert is vice-president, Health Policy Research, at Harris Interactive in New York City. Michael Newman is a senior research manager there, and Robert Leitman is division president, Health Care.

care and for-profit enterprise. Views on DTCA center on three effects: cost, communication, and health of the public. Critics claim that DTCA raises health care costs by stimulating consumers to demand newer, more expensive drugs, often with high profit margins.³ Some members of Congress are so concerned about this possibility that they have suggested limiting Medicare beneficiaries' access to heavily advertised drugs.⁴ The pharmaceutical industry rejects arguments that DTCA is inflationary, and while not denying the profit motive, it points out that DTCA serves a patient education function.⁵ The industry's argument is that patients are highly motivated to seek the best available treatment for their condition, and they need and deserve more and better information on which to base their judgments. Some patients may be even more informed than their physicians are regarding particular treatments. DTCA critics take a skeptical view of this claim, fearing that pressure from patients erodes physicians' authority and may lead to inappropriate prescribing.⁶ Others worry that patients are confused by deceptive advertising and that precious time is wasted during physician office visits to discuss minor conditions or cosmetic issues brought to patients' awareness by ads.⁷ Jane Henney, former FDA commissioner, summarized the debate by asking, "Do these advertisements provide consumers with information that empowers them to care for their health, or are they misleading in a way that presents a public health hazard?"⁸

There is scant research on the health effects of DTCA. Prior surveys by the FDA and *Prevention* magazine consider mainly indirect effects of DTCA on health by examining consumers' understanding of advertisements and patient-doctor interactions.⁹ Most Americans are aware of DTCA, and huge numbers are having discussions about advertised drugs with their physicians. However, past investigations have not explored the types of conditions that are discussed with physicians during these conversations, the actions that result from discussions about DTCA between doctors and patients, and the effect, if any, on health outcomes.

This paper reports results of a survey of a national sample of consumers who have discussed advertised drugs with their physicians. Our goal was to describe actual health care experiences and outcomes, rather than opinions and attitudes. The underlying assumption was that DTCA stimulates patients to discuss advertised drugs during physician visits and leads to actions taken that result in health-related outcomes. Using patients' reports, our research sought to determine the health-related value (or harm) resulting from these visits. It addressed three questions: (1) What sorts of conditions or problems are discussed during physician visits that include a discussion about an advertised drug? (2) What actions are taken by physicians—including additional tests and treatments—as a result of these visits? (3) Do outcomes of care differ by whether the patient takes the advertised drug that was discussed during the visit or some other drug?

Data And Methods

The data are from a telephone survey designed by a team of researchers from Harvard University/Massachusetts General Hospital and Harris Interactive. The team had full control over the content of the survey, access to the data, and control over interpretation of the results. Telephone interviews with a national probability sample of 3,000 adults were conducted by Harris Interactive between 9 July 2001 and 16 January 2002 using random-digit dialing and random household member selection procedures. Response rates were enhanced in a number of ways. A \$10 incentive was offered for completion of the interview (including \$2 up front for difficult-to-reach respondents). Where telephone numbers of nonrespondents could be matched with an address (58 percent), letters were mailed explaining the purpose of the survey and encouraging response. A toll-free number was offered so that respondents could complete the survey at a convenient time. Attempts also were made to contact nonrespondents at various times of the day and days of the week. The response rate was 53 percent. Although lower than optimal, this compares favorably with other published data from national consumer surveys.¹⁰

■ **Questionnaire development.** The survey was designed to gather data on health care experiences resulting from ambulatory visits with physicians. To develop the survey questions, we performed an extensive literature review and then held a focus group run by a professional facilitator in Boston in January 2001. The instrument underwent cognitive testing, was revised based upon our findings, and was pretested on twenty respondents.¹¹

Our initial concept was to compare the health care experiences of patients who were aware of DTCA with those of patients who were not. However, research from the FDA as well as our own pretesting showed that exposure to DTCA in the United States is nearly universal. An alternative design was tested that would compare patients who were prompted solely by DTCA to schedule a physician visit with those who had a physician visit that was not prompted by DTCA. This also was rejected, because pretesting suggested that patients schedule appointments with physicians for a variety of reasons, based on multiple sources of information. Very rarely would consumers identify DTCA as the sole reason for scheduling a visit. As a result, we took the perspective that there exists a continuum of visit types ranging from those for which DTCA had no influence on seeing the doctor to those for which DTCA was the principal influence. We focused, therefore, on visits during which DTCA prompted patients to discuss their health, regardless of why the visit was scheduled. Other survey questions elicited the level of DTCA influence on the visit. This study focuses for the most part on the health care experiences that transpired following those visits.

■ **Variables and relevant subpopulations.** The survey was designed to ask questions tailored to subgroups of patients defined by their familiarity with DTCA and by relevant medical events. All respondents, regardless of medical history, were asked about health status, presence of chronic illnesses, and sociodemographic

“DTCA was one of many health information sources influencing patients’ decision to discuss a health issue with their physician.”

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characteristics (sex, race/ethnicity, education, insurance status, and drug coverage).

The major subgroup consisted of respondents who had ever been prompted by a DTC ad to talk to a doctor about an advertised drug or other health issue or concern (35 percent). We refer to these as DTCA discussions or DTCA visits, to distinguish them from visits during which a DTC ad is not discussed. DTCA visits were categorized by whether the patient primarily discussed a drug, a new health concern, or a possible change in treatment for an ongoing concern. Subsequent questions focused on the content of a single DTCA visit, so if patients had more than one, we asked them to choose the one that was most important to their health. Because pretesting suggested that patients’ motivation to speak with their physician is multifactorial, respondents also were asked to identify other sources of information that influenced their decision to have the discussion with their doctor and to note which were the most important.

Respondents were then asked to report the condition or problem discussed during the visit, and whether the condition had ever been confirmed (“Did a doctor or other medical professional ever tell you that you had [the marker condition]?”). This is similar to the approach used by the Agency for Healthcare Research and Quality (AHRQ) in its Medical Expenditure Panel Survey (MEPS).¹² These conditions were reviewed by a physician and coded into a “reason for visit” using the classification system employed by the National Ambulatory Medical Care Survey (NAMCS).¹³ A few conditions either were too general (for example, “infections”) or merely mentioned a particular drug (for example, “Viagra”) and so were not forced into a NAMCS category. Furthermore, to address whether DTCA resulted in the diagnosis of or treatment for conditions of public health interest, we identified the fifteen “high priority” conditions listed by AHRQ and adopted by the Institute of Medicine (IOM) in its report *Crossing the Quality Chasm*.¹⁴

A series of questions addressed actions taken as a result of the DTCA visit. We asked whether the physician wrote a prescription for the advertised drug or another prescription drug, or recommended an over-the-counter (OTC) drug. We inquired whether the physician made a referral to a specialist, suggested a change in diet or exercise, ordered a laboratory test, or suggested limitations in smoking or drinking.

A second subgroup included all respondents who had a DTCA visit, were prescribed a drug, and took the drug as prescribed (21 percent). They were asked a series of health-related quality-of-life questions, including reported presence of side effects, and improvement/worsening of overall health, symptoms, and laboratory results. Finally, among respondents who reported switching medications to treat their conditions (5 percent), we asked which drug had worse side effects (com-

paring the “old” drug to the “new” drug) and which drug was easier or more difficult to remember to take (compliance). If one drug had no side effects and the other did, we assumed that the drug with side effects was worse.

■ **Analysis.** The primary purpose of the analysis was to describe the experiences of patients who reported having a DTCA visit. However, because patients are subject to multiple influences in making health care decisions, we attempted to isolate further the influence of DTCA. We did this in two ways: (1) We compared patients for whom DTCA was one of the two most important sources of information that influenced them to have the health discussion with their doctor versus all other patients (high versus low DTCA influence); and (2) among patients who were prescribed drugs and took them, we compared patients who received the DTCA drug versus all other patients.

Because they may be at higher risk for poor outcomes, we compared patients in fair or poor health with all other patients. We also compared patients with and without high-priority diagnoses. Bivariate differences were tested using the chi-square statistic. We then adjusted the responses by direct standardization, employing logistic regression models. The predicted logits were retransformed to percentages. This approach assigns each person the attribute of interest—for example, fair/poor health status—but all other characteristics are assumed to be at the sample mean. Statistical inferences were based on the results of the underlying logistic regressions. Initial runs included all of the variables in Exhibit 1, but since health status and insurance coverage for drugs were the only variables that were consistently significant ($p < .05$), the percentages are adjusted only for those variables. However, because none of the results changed by more than a percentage point or two, we present only the unadjusted results.

Analyses were performed with SPSS. To account for nonresponse, all responses were weighted so as to represent a national sample.¹⁵ To account for possible recall bias, we repeated the analyses for just those respondents who had a DTCA discussion in the three months before the interview.

Study Results

Our sample included 76 percent white, non-Hispanics; 39 percent college graduates; and 88 percent adults with health insurance (Exhibit 1). The study procedures resulted in a sample that closely resembled national data in terms of regional representation, health status, and recent ambulatory visits. There was a slight underrepresentation of younger, minority, less educated, and uninsured adults.

■ **Effects of DTC ads.** Approximately 86 percent of all consumers saw or heard a DTC ad in the last year. About 35 percent of all respondents were prompted by an ad to have a discussion about an advertised drug or other health concern during a visit with a physician (DTCA visit). Nearly two-fifths of patients having a DTCA visit talked about a prescription drug, about one in five discussed a new concern, and about one-third talked about a possible change in treatment for an ongoing condi-

EXHIBIT 1
Description Of Study Sample, Survey On Direct-To-Consumer Advertising Of
Prescription Drugs, 2001-02

	Number of respondents ^a (unweighted)	Percent distribution	
		Unweighted	Weighted
All	3,000	100.0%	100.0%
U.S. region			
New England	163	5.4	5.3
Mid-Atlantic	521	17.4	17.2
Southeast	672	22.4	22.5
South Central	296	9.9	10.0
Midwest	515	17.2	16.8
Plains	234	7.8	7.8
Mountain	191	6.4	6.7
West	408	13.6	13.7
Age			
18-34	834	27.8	32.0
35-64	1,591	53.0	51.3
65+	575	19.2	16.7
Race/ethnicity			
White, non-Hispanic	2,280	76.0	71.8
Black, non-Hispanic	287	9.6	11.5
Hispanic	241	8.0	10.5
Asian	58	1.9	1.7
Unknown/other	134	4.5	4.5
Education			
Less than high school	259	8.6	11.0
High school or some college	1,566	52.2	65.4
College grad	1,161	38.7	23.1
Unknown	14	0.5	0.4
Insurance status			
Insured	2,629	87.6	83.1
Uninsured	362	12.1	16.6
Insurance provides some drug coverage			
Yes	2,231	91.6	91.2
No	203	8.3	8.8
Health status			
Excellent/good/very good	2,509	83.6	82.8
Fair/poor	478	15.9	16.7
Saw doctor in past 3 months			
Yes	1,610	53.7	52.1
No	1,374	45.8	47.3

SOURCE: Authors' survey of experiences with direct-to-consumer advertising (DTCA) of prescription drugs, 2001-02.

NOTES: Percentages may not total to 100 due to missing data or rounding.

^a Number of valid responses in each category.

tion (Exhibit 2). DTCA was one of many health information sources influencing patients' decision to discuss a health issue with their physician. Other than DTCA, 51 percent of patients were influenced by friends/family, 40 percent by broadcast media, 34 percent by print media, 33 percent by pamphlets in doctors' offices, 33 percent by another doctor, 16 percent by the Internet, and 17 percent by a pharmacist. Of persons with a DTCA visit, about 45 percent (n = 474) were (by our definition)

EXHIBIT 2
Characteristics Of DTCA Visits With Physicians, By Patient's Health Status And Influence Of Advertising, 2001-02

	All (N = 1,039)	Patient's health status (N = 1,035)		DTCA influence (N = 1,022)	
		Excellent/good (n = 837)	Fair/poor (n = 198)	High (n = 474)	Low (n = 548)
Type of discussion reported ^a					
About prescription drug	37.4%	40.8%	26.1%	41.9%	34.6%
About new health concern	21.9	23.8	19.6	20.0	25.9
About change for ongoing concern	35.6	30.8	45.2	34.5	32.1
Other	5.0	4.5	9.0	3.6	7.4
Conditions and diagnoses ^b					
Existing condition	46.4	42.4	63.4	48.4	44.9
New diagnosis/condition	24.7	26.5	17.3	21.4	27.8
Condition not confirmed by physician or health care worker	20.1	22.5	10.9	22.0	18.5
Missing/unknown	8.8	8.7	8.4	8.2	8.8

SOURCE: Authors' survey of experiences with direct-to-consumer advertising (DTCA) of prescription drugs, 2001-02.

NOTE: DTCA visits are defined as visits with a physician during which a DTCA-prompted discussion occurred about an advertised drug or other health concern.

^a For type of DTCA discussion reported, differences were significant ($p < .01$ using the chi-square test) for patient's health status and DTCA influence.

^b Existing conditions are conditions, identified by the respondent, that were discussed during the DTCA visit, for which respondents received confirmation (were ever told by physician or other health care worker that they had the condition), and were reported to exist prior to the visit. New diagnoses/conditions are confirmed conditions that the patient did not know existed or had not been diagnosed prior to the visit, as reported by the respondent. For conditions and diagnoses, differences were significant ($p < .01$ using the chi-square test) for patient's health status.

highly influenced by DTCA to have the discussion with their physician, and 19 percent ($n = 198$) were in fair/poor health. People in good health or who were highly influenced by DTCA were more likely than others to have a DTCA discussion about a particular prescription drug rather than about new or ongoing health concerns ($p < .01$).

About half of patients with DTCA visits had previously been diagnosed with the condition discussed during the visit, and nearly one in four were given new diagnoses. New and existing conditions are listed in the exhibit only if they were confirmed by a health professional (according to the respondent). The five most common existing conditions were allergies (13 percent), arthritis (10 percent), high cholesterol (7 percent), diabetes (7 percent), and asthma (5 percent). The most common new diagnoses were allergies (9 percent); diseases of the esophagus, duodenum, and stomach (including gastroesophageal reflux disease, or GERD) (8 percent); high cholesterol (6 percent); arthritis (6 percent); hypertension (6 percent); diabetes (5 percent); and depression (5 percent). Approximately 43 percent of new diagnoses and 51 percent of existing diagnoses were "high priority" conditions according to AHRQ/ IOM criteria (data not shown). Notably, 8.8 percent of patients did not specify a condition discussed during the visit, and an additional 20.1 percent of conditions were not confirmed—that is, the patient did

not recall being told by a doctor or other health professional that he or she had the condition reported in the survey.¹⁶

■ **Physicians' actions.** Exhibits 3 and 4 refer to actions taken by physicians as a result of the DTCA visit. Nearly three-quarters of respondents with a DTCA visit received a drug prescription; 43 percent of DTCA visits resulted in a prescription for the advertised drug. Other actions taken included referrals to specialists, lifestyle changes, recommendations for OTC drugs, lab tests, and reductions in smoking/drinking.

Nearly all respondents (95 percent) with a DTCA visit reported at least one action taken. Even after we excluded prescriptions for the DTCA drug, 53 percent still resulted in at least one action taken by the physician. People in fair/poor health and with high-priority conditions generally had more actions taken on their behalf, but they did not differ significantly from their healthier counterparts in terms of the likelihood of receiving a DTCA drug. Patients with unconfirmed

**EXHIBIT 3
Reported Actions Taken By Physicians Resulting From DTCA Visits, By Patient's Health Status And Diagnosis/Condition Type, 2001-02**

Action	All (N = 953) ^b	Health status (N = 952)		Diagnosis/condition type ^a (N = 949)		
		Excellent/ good (n = 770)	Fair/poor (n = 182)	Existing (n = 481)	New (n = 271)	Not confirmed (n = 197)
Prescribed any drug	72.9%	71.0%	81.1%	81.1%	80.0%	45.7%
Prescribed DTCA drug	43.3	43.5	42.9	49.1	44.7	28.8
Referred to specialist	32.6	27.5	53.5	35.8	35.7	21.2
Suggested lifestyle change	52.0	49.2	63.9	51.7	58.3	45.7
Recommended OTC drug	19.1	19.8	16.2	18.3	20.4	18.7
Ordered lab test	57.3	52.8	76.2	58.0	66.3	44.7
Suggested quit smoking/ drinking	33.9	30.7	47.3	35.2	35.0	30.0
Patients reporting any action taken	95.2	95.1	95.1	96.3	99.2	87.1
Patients reporting any action taken other than prescription for DTCA drug ^c	55.8	55.3	57.6	50.8	57.1	66.5
No action taken	4.8	4.9	4.9	3.7	0.8	12.9

SOURCE: Authors' survey of experiences with direct-to-consumer advertising (DTCA) of prescription drugs, 2001-02.

NOTES: DTCA visits are defined as visits with a physician during which a DTCA-prompted discussion occurred about an advertised drug or other health concern. OTC is over-the-counter. For health status, differences were significant ($p < .01$ using the chi-square test) for prescribed any drug, referred to specialist, suggested lifestyle change, ordered lab test, and suggested quit smoking/drinking. For diagnosis/condition type, differences were significant ($p < .05$ using the chi-square test) for prescribed any drug, prescribed DTCA drug, referred to specialist, suggested lifestyle change, ordered lab test, patients reporting any action taken, patients reporting any action taken other than prescription for DTCA drug, and no action taken.

^a Existing conditions are conditions, identified by the respondent, that were discussed during the DTCA visit, for which respondents received confirmation (were ever told by physician or other health care worker that they had the condition) and were reported to exist prior to the visit. New diagnoses/conditions are confirmed conditions that the patient did not know existed or had not been diagnosed prior to the visit, as reported by the respondent.

^b Excludes patients who could not identify any condition or reason for visit.

^c To calculate this number, we divided the number of respondents who were not prescribed a DTCA drug but reported at least one other action taken on their behalf by the number of patients with a DTCA visit.

EXHIBIT 4
Reported Actions Taken By Physicians Resulting From DTCA Visits, By Priority Of Condition And Influence Of Advertising, 2001–02

Action	All (N = 953) ^a	High-priority condition ^b (N = 752)		DTCA influence (N = 940)	
		Priority (n = 374)	All other (n = 378)	High (n = 436)	Low (n = 504)
Prescribed any drug	72.9%	81.4%	79.8%	71.4%	73.8%
Prescribed DTCA drug	43.3	47.4	47.8	46.9	40.6
Referred to specialist	32.6	40.1	31.8	24.6	38.6
Suggested lifestyle change	52.0	66.0	42.7	45.2	57.3
Recommended OTC drug	19.1	14.4	23.6	19.9	18.4
Ordered lab test	57.3	72.1	50.4	50.4	62.3
Suggested quit smoking/drinking	33.9	42.0	28.7	31.5	35.9
Patients reporting any action taken	95.2	97.7	96.9	94.3	95.7
Patients reporting any action taken other than prescription for DTCA drug ^c	55.8	52.7	50.5	51.3	59.1
No action taken	4.8	2.3	3.1	5.7	4.3

SOURCE: Authors' survey of experiences with direct-to-consumer advertising (DTCA) of prescription drugs, 2001–02.

NOTES: DTCA visits are defined as visits with a physician during which a DTCA-prompted discussion occurred about an advertised drug or other health concern. OTC is over-the-counter. For high-priority condition, differences were significant ($p < .05$ using the chi-square test) for referred to specialist, suggested lifestyle change, recommended OTC drug, ordered lab test, and suggested quit smoking/drinking. For DTCA influence, differences were significant ($p < .05$ using the chi-square test) for referred to specialist, suggested lifestyle change, ordered lab test, and patients reporting any action taken other than prescription for DTCA drug.

^a Excludes patients who could not identify any condition or reason for visit.

^b Cancer, diabetes, emphysema, high cholesterol, HIV/AIDS, hypertension, ischemic heart disease, stroke, arthritis, asthma, gall bladder disease, stomach ulcer, back problems, Alzheimer's disease and other dementias, and depression and anxiety disorders, as listed in Institute of Medicine, *Crossing the Quality Chasm: A New Health System for the Twenty-first Century* (Washington: National Academies Press, 2001); and the Medical Expenditure Panel Survey (MEPS) HC-006R: 1996 Medical Conditions.

^c To calculate this number, we divided the number of respondents who were not prescribed a DTCA drug but reported at least one other action taken on their behalf by the number of patients with a DTCA visit.

conditions were less likely to have actions taken, and patients with new conditions were slightly more likely than others were to receive a lifestyle recommendation. People who were highly influenced by DTCA were no more likely than others were to be prescribed the advertised drug but were less likely than others were to be referred to a specialist, have a lab test ordered, or have a lifestyle change suggested ($p < .001$).

■ **Health-related outcomes.** About four out of five patients who received a prescription drug and took it as prescribed reported that they felt much better or somewhat better overall after taking the drug, and similar numbers reported that their symptoms improved. Among persons who underwent lab tests, 84 percent reported that their test results improved. These health-related quality-of-life outcomes generally did not vary by type of drug prescribed (DTCA versus other) ($p < .05$). Among patients who switched prescription drugs for the same condition (5 percent of all consumers), 28 percent said that the new drug was easier to take or remember to take, 8 percent said that it was more difficult, and 64 percent said that it was about

“Some of the new diagnoses that were discovered as a result of these visits are often underdiagnosed and undertreated.”

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the same. None of these effects varied significantly by whether the patient switched to a DTCA or to another drug (all $p < .05$), and no clinically notable differences occurred between patients with new or existing diagnoses. However, those who switched to a DTCA drug were less likely than others who switched were to report that side effects of the new drug were worse (8 percent versus 22 percent) (overall $p = .041$).¹⁷

Because patient reports are subject to recall bias, we repeated the analyses for people who had a DTCA visit in the three months before the interview ($n = 257$, or 25 percent of all DTCA visits). Virtually all of the figures were within a few percentage points of the results for the full sample, although fewer differences were statistically significant because of the smaller sample sizes.

Discussion

■ **Effects on consumers.** This study provides a new perspective on the health consequences of DTCA visits, as perceived by patients. As a marketing tool, DTCA is clearly effective when one considers the large number of people who are aware of the ads, and the number who discuss the ads with their physicians and who eventually receive the advertised drug. But marketing theory also suggests that consumers can gain extra benefits not limited to the advertised drug, by obtaining supplementary information about their health.¹⁸ Prior consumer surveys suggest some of these spillover effects, including raised awareness of new conditions, attentiveness to side effects, increased information seeking, and education about nondrug treatments.¹⁹ These benefits may be countered by the potential for harm resulting from possibly deceptive advertising, or overuse that may result from targeting relatively healthy people or by “medicalizing” nonmedical problems.²⁰

■ **Reassuring findings.** Our data add to the literature on health effects by addressing the study questions raised earlier and are reassuring on several counts. First, we found that a sizable portion of patients with DTCA visits reported seeing physicians for clinically important conditions and that many visits resulted in new diagnoses. Some of the most common new diagnoses that were discovered as a result of these visits—high cholesterol, hypertension, diabetes, and depression—are often underdiagnosed and undertreated in the general population.²¹ Very few visits were for cosmetic or lifestyle problems.

Second, we found that DTCA visits resulted in health care actions taken on behalf of patients that went beyond the expected prescribing of drugs, both advertised and not. Third, given concerns over the possible adverse health consequences of DTCA, our study is notable for what it does not show. We failed to find large negative health consequences for patients on a number of health-related as-

pects, including symptom relief, improved laboratory results, and ease of taking the drug, and for the most part found no difference by whether the patient took the drug that was advertised or some other drug. There seemed, in fact, to be a small advantage in relief of side effects among patients who switched their medications to the advertised drug after their visit, although the number of respondents was small. At a minimum, therefore, we did not detect widespread adverse effects of DTCA based on self-reported health status.

■ **Methodological issues.** The data from our study and the focus groups that preceded the survey raise at least two methodological questions about researchers' ability to attribute specific motives to patients' behavior. First, consumers rely on a multitude of information sources, and the process leading from an ad to a prescription is complex. Many intervening steps often must occur, including scheduling a physician visit, taking and interpreting laboratory tests (for example, for allergies or high blood cholesterol), and perhaps trying lifestyle changes first.²²

Second, people who are interested in making informed decisions about their health may be more likely to exhibit better health habits than others are, thus confounding the effect of public education. Research on mass communications and advertising has long recognized that even when exposure is widespread, perception and retention are usually motivated—that is, selective. For example, Republicans are more likely than Democrats are to pay attention to advertisements for Republican candidates.²³ Thus, we expect prior interest in one's health to be correlated with attention to and recall of DTC advertising.

■ **Study limitations.** This investigation has certain other limitations that may affect its interpretation and generalizability. The basic study design provides descriptive, cross-sectional data. We did not collect information on outcomes for patients who had physician encounters without a DTCA-prompted discussion. However, as noted above, DTCA awareness is widespread, and so it is unlikely that any cross-sectional study in this country would be able to isolate its effects so completely. Second, even though we had a large national sample, it was still too small to allow for rigorous control of underlying clinical conditions other than overall health status. Future studies restricted to specific conditions might obtain different results.

Third, the generally positive health outcomes we found may be subject to placebo effects or recall bias, although on the latter issue our reanalysis using three-month data suggests otherwise. Furthermore, the duration of experience with new drugs may not have been long enough to identify side effects, and retrospective assessments of outcomes can be biased, although they also can be valid reflections of patients' beliefs.²⁴ Fourth, future studies should include some measure of appropriateness of treatments.

Fifth, it is difficult to assess the magnitude of our findings without additional context. For example, we found that 8 percent of all adults received a new diagnosis from a health care professional as a result of a visit during which a DTCA-prompted discussion took place. This represents approximately sixteen million

people—a very large number. But given the multitude of health care influences, it would be difficult to ascribe all of that benefit to DTCA. Sixth, we did not measure health outcomes for people not receiving a prescription drug, although in our study this represented only 27 percent of people with DTCA visits.

Seventh, documented positive effects in our study may be attributable to either the physician-patient interaction, to the dispensing of pharmaceuticals, or both. Eighth, the response rate was less than optimal. Although prior research on survey methods has demonstrated that response rates even lower than 50 percent can provide valid estimates of consumer opinion, these results may not apply to reports of health care experiences.²⁵

■ **Areas not addressed.** Finally, some of the criticisms of DTCA are economic or ethical and were not addressed by this study. We cannot comment on whether patients were receiving drugs that were more expensive than necessary, or whether consumers were misled by DTC ads. Surveys of consumers also cannot address whether DTCA adds costs to the health care system, and if it does, whether its benefits are worthwhile.

DESPITE THESE LIMITATIONS, our study reports on data heretofore unavailable on patients' experiences with DTCA. Our results suggest that DTCA is a potentially powerful source of consumer health information with effects that include, but also transcend, promoting the use of advertised drugs. DTCA appears to affect patients' behavior, resulting in more physician visits that detect treatable disease but also precipitating a variety of other health actions whose consequences remain to be understood. The advent of DTCA coincides with a general trend toward consumerism, with expectations on the part of patients that their physicians will interpret health information for them and help them judge its value.²⁶ It is telling, perhaps, that physicians belonging to the National Medical Association, whose members tend to treat more disadvantaged patients, perceive that DTCA benefits their patients by increasing awareness and improving doctor-patient communication.²⁷

In conclusion, there seem to be no widespread adverse health effects from these visits, on balance. From a societal standpoint, a definitive judgment on the consequences of DTCA awaits further study and reflection. One important question is whether other sources of health information could achieve DTCA's educational benefits at less cost and with fewer undesirable consequences. To answer this question would require that public and nonprofit agencies launch comparable efforts to educate the public about their health and that those efforts be systematically studied. For now, however, DTCA constitutes an influential purveyor of health information for the general public, one whose power and prominence on our health care scene may be unmatched by any other factor.

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This work was supported by a grant from the American Medical Association (AMA)–Industry Roundtable Steering Committee and selected members of the Ad Hoc Working Group on the Economics of the Pharmaceutical Industry (AstraZeneca, Aventis, Bristol-Myers Squibb, Johnson and Johnson, Merck, Pharmacia, Pfizer, Wyeth, and the National Pharmaceutical Council). The authors are grateful to Kimberly Dietrich for valuable comments on the study design and manuscript; to Kathryn Aiken for technical advice on the questionnaire; to Eran Bendavid for advice on grouping conditions; to Stephen Soumerai for comments on an earlier draft; to Petra Symister for data management; and to Sandra Feibelmann for research assistance.

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