VOLUME 27 · NUMBER 25 · SEPTEMBER 1 2009

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Cancer-Related Direct-to-Consumer Advertising: Awareness, Perceptions, and Reported Impact Among Patients Undergoing Active Cancer Treatment

Gregory A. Abel, Harold J. Burstein, Nathanael D. Hevelone, and Jane C. Weeks

From the Center for Outcomes and Policy Research and the Division of Women's Cancers, Department of Medical Oncology, Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA.

Submitted October 17, 2008; accepted March 23, 2009; published online ahead of print at www.jco.org on August 3, 2009.

Supported by a Young Investigator Award from the American Society of Clinical Oncology Cancer Foundation.

Authors' disclosures of potential conflicts of interest and author contributions are found at the end of this article.

Corresponding author: Gregory A. Abel, MD, MPH, Center for Outcomes and Policy Research, Dana-Farber Cancer Institute, 44 Binney St, Smith 271, Boston, MA 02115; e-mail: gregory_abel@dfci.harvard.edu.

0732-183X/09/2725-4182/$20.00

DOI: 10.1200/JCO.2008.20.6599

ABSTRACT

Purpose
Although cancer-related direct-to-consumer advertising (CR-DTCA) is prevalent, little is known about cancer patients' experiences with this controversial medium of medical communication.

Methods
We administered a 41-item, mailed questionnaire to consecutive patients with breast and hematologic malignancies who were undergoing active treatment at our institution. We assessed awareness of CR-DTCA within the prior year, perceptions of CR-DTCA, and CR-DTCA–prompted patient and provider behaviors.

Results
We received 348 completed questionnaires (response rate, 75.0%). Overall, 86.2% reported being aware of CR-DTCA, most frequently from television (77.7%). Awareness did not vary with clinical or sociodemographic factors except that patients were more likely to be aware of CR-DTCA for products specific to their cancer types ($P < .0001$). A majority of those aware reported that CR-DTCA made them "aware of treatments they did not know about" (62.2%), provided information in "a balanced manner" (65.2%), and helped them to have "better discussions" with their provider (56.8%). These perceptions were significantly more favorable among those who had not graduated from college ($P < .05$ for each). Overall, 11.2% reported that CR-DTCA made them "less confident" in their providers' judgment. Of those aware, 17.3% reported talking to their provider about an advertised medication, although less than one fifth of those reported receiving a prescription for the advertised medication.

Conclusion
The patients in our cohort were highly aware of CR-DTCA. CR-DTCA was found to be accessible and useful; however, it decreased some patients' confidence in their providers' judgment. CR-DTCA prompted a modest amount of patient-provider discussion but infrequent patient-reported changes in therapy.

J Clin Oncol 27:4182-4187. © 2009 by American Society of Clinical Oncology

INTRODUCTION

Direct-to-consumer advertising (DTCA)—a promotional effort by a pharmaceutical company or other provider of medical services to present information about medications or medical services to the public in the lay media[1]—is highly controversial. While proponents contend that it educates and empowers patients, opponents argue that it is deceptive and that it results in unnecessary, and possibly detrimental, prescriptions.[1-5] National interest in DTCA has intensified during recent years. In a landmark 2006 report, the US Government Accountability Office (GAO) concluded that the US Food and Drug Administration (US FDA) had become less efficient at policing the medium, as evidenced by its issuance of fewer regulatory letters.[6] Another report that year from the Institute of Medicine concluded that the US FDA lacked the resources and authority to regulate the safety of DTCA.[7]

When DTCA targets the undiagnosed, the goal is to encourage potential patients to seek primary evaluation and treatment; sometimes, however, DTCA targets patients who already have disease, with the aim of prompting them to request changes to their treatment. With the first type of DTCA, societal benefit may be gained through the diagnosis and treatment of patients who were previously not known to have disease. The second type of "subspecialty DTCA" is perhaps more contentious than the first, because it is less clear that the

highly specialized information therein (eg, complex details about appropriate disease management) can truly be directly processed by, and therefore educational for, the average patient.[8-10] Indeed, in their assessment of a recent DTCA campaign aimed at patients with coronary artery disease, Boden and Diamond[9] questioned the educational value of DTCA for a specific model of coronary arterial stent because they felt that the device was being promoted to people who are "ill-equipped to make judgments about the many clinically relevant but subtle and complex therapeutic issues that even specialists continue to debate."[9(p2197)]

Given the specialized nature, potential adverse effects, and high cost of cancer-related treatments, cancer-related DTCA (CR-DTCA) seems equally controversial. Although CR-DTCA may help patients with cancer learn about their illnesses and, thus, engage more fully in decisions relating to their care, it carries the risk of encouraging inappropriate treatments among desperate patients. Both potential effects are clearly mediated by how aware patients with cancer are of such advertising as well as how often they discuss advertised cancer-related medications with their providers. Their awareness of CR-DTCA, in turn, may be affected by sociodemographic characteristics, their specific cancer diagnoses, and their baseline media exposures.

We sought to determine the awareness and perceptions of CR-DTCA among patients with cancer who were actively receiving treatment. We also sought to assess how often CR-DTCA prompted patients to have conversations with their providers, patient satisfaction with those discussions, and ultimately the impact of CR-DTCA on prescribing habits. We hypothesized that, as data-driven subspecialists who are treating patients with serious and costly medications, oncology providers would rarely be influenced by patient requests for medications.

METHODS

Study Population

The study was conducted at Dana-Farber Cancer Institute (Boston, MA) and was approved by our institutional review board. We surveyed consecutive patients undergoing treatment for breast or hematologic malignancy who had been seen for an appointment between March 1, 2006, and March 31, 2007, and had either a charge for chemotherapy within 3 months of their visit or chart documentation of active hormonal treatment at their appointment. Patients were eligible if they spoke English as their primary language and resided in the United States. Eligible patients were mailed an invitation to participate along with a survey and a postage-paid return postcard to use if they wished to opt out. An additional letter, survey, and postage-paid refusal postcard were sent to those who did not respond within 1 month. Those who did not respond after another 2 weeks (6 weeks from the initial mailing) were contacted by phone and were offered another mailed survey or the opportunity to decline participation. After three failures at making telephone contact, a patient was considered a nonrespondent. Of 464 eligible patients identified, 348 (75.0%) completed surveys, 90 opted out either by postcard or when contacted by telephone, and the remaining 26 never responded.

Data Collection

Instrument development. The survey was designed to assess awareness of patients with cancer of CR-DTCA, patient and advertisement attributes associated with awareness, and patient-reported patient and provider behaviors that resulted from CR-DTCA. Whenever possible, questions were drawn from previously published surveys. New questions were devised by utilizing general principles of survey development.[11,12] Pilot testing and cognitive debriefing with 12 patients with breast cancer allowed for iterative revision in addition to assessments of face validity, content validity, and response burden.

The 41-item questionnaire included 24 questions adapted from prior surveys and used modified questions from the patient DTCA survey by Weissman et al,[13] the Consumer Assessment of Healthcare Providers and Systems (CAHPS) 3.0 survey domains of health status, access, communication/interaction, demographic, and verification,[14] the Health Information National Trends Survey (HINTS) media exposure domain,[15] and a question from a Cancer Care Outcomes Research and Surveillance Program (CanCORS) survey[16] that assesses cancer patients' preferences for involvement in medical decisions. As we could not find any prior surveys intended to assess awareness of oncology-related DTCA, some original items were also constructed.

Patients were prompted as to their awareness of CR-DTCA with the question "Have you seen or heard an advertisement for any of these cancer-related medications during the past 12 months?" The question was followed by a list of 24 specific medications identified to have appeared in at least one print advertisement through our prior content analysis of print CR-DTCA, which sampled more than 2 years of general and patient-directed cancer magazines.[8] One exception was Aromasin (exemestane; Pfizer, New York, NY), which was known to have been advertised only on the internet. As most DTCA campaigns use many sources of media simultaneously, we were confident that we had included most cancer-related medications that had undergone major campaigns. Through the use of skip patterns, patients who reported awareness of any product then were asked "In the last 12 months, has an advertisement for a prescription drug prompted you to talk to your cancer doctor or nurse about a prescription drug for yourself?" Those who responded "yes" were asked "What was the result of that discussion?" with four choices: received advertised medication, received another medication, told they did not need medication, or do not remember.

Statistical methods. We first analyzed awareness dichotomously (ie, aware of any advertisement *v* none) and then analyzed depth of awareness by dividing respondents into three groups: unaware (ie, 0 advertisements), low

Table 1. Demographic and Clinical Characteristics of Survey Cohort

Variable	% of Patients
Female sex	87.4
Age ≥ 50 years	63.8
Disease type	
Breast cancer	73.9
Hematologic malignancy	25.0
Other malignancy*	1.1
Race/ethnicity	
White	92.8
Black	3.4
Other	3.7
Hispanic or Latino†	0.9
College graduate‡	62.4
Media exposure	
Own cable TV	90.5
Watch TV at least 1-2 hours per weekday	77.9
Listen to radio at least 1-2 hours per day	46.3
Use internet at least 1-2 hours per day	52.6
Read magazine at least 1-2 days in past 7 days	77.3
Read newspaper at least 1-2 days in past 7 days	78.5
Perception of cancer care	
Overall cancer care rated 10 on a scale of 1 to 10	65.1

*Patients were asked to list their first malignant diagnoses, which in a few instances were different from the study eligibility diagnoses.
†Hispanic or Latino designations were not mutually exclusive with white or black.
‡College experience of ≥ 4 years.

Table 2. Awareness of CR-DTCA

Awareness Variable	% of Patients
Awareness of CR-DTCA for product types*	
Any cancer-related	86.2
Disease-specific	62.4
Supportive	78.7
Reported CR-DTCA media venues†	
Television	77.7
Magazine	66.7
Pamphlet	34.3
Internet	21.0
Newspaper	12.0
Radio	5.3
Billboard	1.3
Awareness of specific products*	
Procrit (epoetin alfa; Ortho Biotech, Bridgewater, NJ)	62.9
Neulasta (pegfilgrastim; Amgen, Thousand Oaks, CA)	56.0
Herceptin (trastuzumab; Genentech, San Francisco, CA)	49.7
Arimidex (anastrozole; AstraZeneca, Wilmington, DE)	41.1
Femara (letrozole; Novartis, East Hanover, NJ)	33.6
Aromasin (exemestane; Pfizer, New York, NY)	20.1
Miralax (polyethylene glycol; Braintree Labs, Braintree, MA)	13.5
Zometa (zoledronic acid; Novartis, East Hanover, NJ)	11.5
Taxotere (docetaxel; sanofi-aventis, Bridgewater, NJ)	10.3
Aranesp (darbopoetin alfa; Amgen, Thousand Oaks, CA)	10.1
Xeloda (capecitabine; Roche, Nutley, NJ)	9.5
Emend (aprepitant; Merck, Whitehouse Station, NJ)	8.3
Iressa (gefitinib; AstraZeneca, Wilmington, DE)	4.9
Gemzar (gemcitabine HCl; Eli Lilly, Indianapolis, IN)	4.6
Bexxar (Tositumomab/I^{131}; GlaxoSmithKline, Philadelphia, PA)	3.7
Abraxane (albumin-bound paclitaxil; Abraxis, Los Angeles, CA)	3.7
Erbitux (cetuximab; ImClone, New York, NY)	3.7
Tarceva (erlotonib; Genentech, San Francisco, CA)	3.7
Nexavar (sorafenib; Bayer, West Haven, CT)	2.9
Aloxi (palonosetron; MGI Pharma, Bloomington, MN)	2.3
Hycamtin (topotecan HCl; GlaxoSmithKline, Philadelphia, PA)	2.0
Alimta (pemetrexed; Eli Lilly, Indianapolis, IN)	1.2
Gelclair (glycyrrhetinic acid/povidone/sodium hyaluronate oral gel; OSI Pharmaceuticals, Melville, NY)	1.2
Quadramet (Samarium SM 153 Lexidronam; Cytogen, Princeton, NJ)	0.6

Abbreviation: CR-DTCA, cancer-related direct-to-consumer advertising.
*Percentages are reported among all 348 survey respondents.
†Percentages are reported among those 300 respondents aware of CR-DTCA.

awareness (ie, 1 to 3 advertisements), and high awareness (ie, 4 or more advertisements). Covariate categories were dichotomized to agree or disagree options for most analyses. Other variables with Likert-scale responses were dichotomized on a case-by-case basis as presented in the tables and text. Bivariate associations were assessed with Pearson's χ^2. Multivariate logistic regression was used to assess the relative influence of demographic covariates on CR-DTCA awareness and depth of awareness, first by including covariates that had been significant in the bivariate analyses and then, because of lack of prior data regarding covariates of awareness in this patient population, by using a backward stepwise selection model with stay criteria of 0.2. All analyses were conducted using the SAS statistical package (SAS 9.1.3; SAS Institute, Cary, NC).

RESULTS

Characteristics of survey respondents are listed in Table 1. Nonrespondents did not differ significantly with respect to age, sex, or diagnostic category. Patients in our cohort were mostly white, and a large percentage had graduated from college. A majority (65.1%) rated their cancer care as 10 on a scale of 1 to 10.

Table 2 summarizes respondents' awareness of CR-DTCA. Overall, 86.2% of respondents reported being aware of CR-DTCA, most commonly for supportive products, such as antiemetics and growth factors. CR-DTCA was experienced in many media venues, but television (77.7%) and magazines (66.7%) were the most common. As listed in Table 3, patients with breast cancer were more likely to be aware of CR-DTCA for products specific to breast cancer, and patients with hematologic malignancy were more likely to be aware of CR-DTCA for products specific to hematologic malignancy (in both instances, P for $\chi^2 < .0001$).

In bivariate analyses, there were no associations of CR-DTCA awareness with sex, education level, ethnicity, treatment duration of less than 6 months versus more than 6 months, breast versus hematologic malignancy, perceptions of quality of cancer care, treatment decision-making preferences, hormonal therapy versus chemotherapy, or daily reported media exposures (except for television, for which those with 3 to 4 hours or more of TV per day were more likely to report awareness: 91.3% *v* 83.3%; P for $\chi^2 = .038$). There was an association of awareness with decreasing age group (P for Cochran-Armitage trend = .006), although the relationship was not significant when this variable was dichotomized (age < 50 years *v* age > 50 years: 90.2% *v* 83.8%; P for $\chi^2 = .097$). Television exposure and categorical age were significant in a multivariate model that included both (for increasing age: odds ratio for awareness, 0.63; 95% CI, 0.49 to 0.87; for increasing TV exposure: odds ratio, 2.08; 95% CI, 1.01 to 4.31).

Patients who were aware of CR-DTCA varied on how many advertisements they reported having seen or heard (range, 0 to 19; median 3.0); 13.9% were unaware, 41.0% had low awareness, and 45.1% had high awareness. The results of bivariate analyses using these three groups were essentially the same as the dichotomous analysis: increased TV exposure was associated with increased depth of awareness (P for $\chi^2 = .021$), and increasing age trended toward association with decreased depth of awareness (P for $\chi^2 = .166$).

A majority of aware respondents agreed or somewhat agreed that CR-DTCA made them aware of treatments they did not know about (62.2%), that it provided information in a balanced manner (65.2%), that it provided information in language they could understand (89.0%), or that it helped them to have better discussions with their

Table 3. Awareness of Disease-Specific CR-DTCA by Diagnosis

Awareness Type	% of Patients by Diagnosis Type: Hematologic Malignancy	% of Patients by Diagnosis Type: Breast Cancer	P for χ^2
Aware of CR-DTCA for hematologic malignancy–specific products	13.8	0.40	< .0001
Aware of CR-DTCA for breast cancer–specific products	25.3	73.2	< .0001

Abbreviation: CR-DTCA, cancer-related direct-to-consumer advertising.

Table 4. Perceptions of Those Aware of CR-DTCA As Stratified by Education

Agree or Somewhat Agree That CR-DTCA	% of Patients			
	All	With < 4 Years of College	With ≥ 4 Years of College	*P* for χ^2
"...made you aware of treatments you did not know about."	62.2	70.6	57.8	.03
"...provided information on risks and benefits in a balanced manner."	65.2	77.8	58.3	< .001
"...provided information in language you could understand."	89.0	92.7	87.2	.15
"...reminded you to follow directions or advice from your doctor."	48.6	58.5	42.6	< .001
"...made you feel less confident in your provider's judgment."	11.2	11.2	11.3	.98
"...led to better discussions about health or medical care with your doctor or nurse."	56.8	65.1	52.0	.03

Abbreviation: CR-DTCA, cancer-related direct-to-consumer advertising.

health care providers (56.8%). A large minority also reported that it helped them to follow directions from their provider (48.6%), and a smaller minority reported that it made them less confident in their provider's judgment (11.2%). In bivariate analyses, these impression did not vary with clinical and sociodemographic covariates except that those without college degrees had more favorable impressions of CR-DTCA (Table 4).

Table 5 summarizes patients' reports of the effect of CR-DTCA among those who were aware: 17.3% reported discussing a cancer-related product with their clinician, and the majority of those (96.2%) reported feeling satisfied with the resulting discussion. Of all of the clinical and sociodemographic factors assessed (ie, the same as for CR-DTCA awareness above), only perception of cancer care was associated with initiating a discussion about a product seen in CR-DTCA with a clinician (26.4% for those who rated the quality of their cancer care < 10 of 10 *v* 12.4% for those who rated it 10 of 10; *P* for $\chi^2 = .002$).

Of those patients who discussed a product, 19.2% reported receiving a prescription for the advertised medication. Thus, the final prescription yield on CR-DTCA in our sample was 2.9% (ie, 86.2% aware × 17.3% discussed × 19.2% received). Although the power to detect associations with receiving a prescription was limited by small sample size (because only 52 patients had a discussion), a trend toward an association with perception of cancer care was observed; 28.6% of those who rated the quality of their cancer care < 10 of 10 received a prescription versus 8.3% of those who rated it 10 of 10 (*P* for $\chi^2 = .064$).

Table 5. Self-Reported Patient and Provider Behaviors Associated With CR-DTCA

Variable	Patients		
	No.	No. Overall	%
Aware	300	348	86.2
Aware and discuss	52	300	17.3
Satisfied with discussion	50	52	96.2
Results of discussion			
Received advertised medication	10	52	19.2
Received another medication	3	52	5.8
Told they did not need medication	32	52	61.5
Do not remember/no answer	7	52	13.4

Abbreviation: CR-DTCA, cancer-related direct-to-consumer advertising.

DISCUSSION

The patients in our cohort reported being highly aware of CR-DTCA, and in general, finding it accessible and useful. Patients were most likely to be aware of supportive treatments and were significantly more likely to be aware of treatments specific to their own cancer types. Education seemed to play a role in their perceptions of CR-DTCA, as the less educated held more favorable impressions. Overall, our respondents reported that CR-DTCA prompted a modest amount of discussion with their cancer providers but infrequent changes in therapy: only approximately 3% reported seeing an advertisement for a cancer-related product, discussing it with a provider, and ultimately receiving a prescription for the advertised medication.

Respondents in our study were so highly aware of CR-DTCA that we had little statistical power to assess covariates; however, we did find that both increased television exposure and decreasing age were associated with increased awareness. The first association is not surprising, as television was the most prevalent source of CR-DTCA reported by our respondents. The second association may reflect the fact that DTCA is a relatively modern phenomenon, as is the view of physicians and patients as partners in medical decision making. It may be that older patients are more likely to see their physician as the sole decision maker and thus do not attend to marketing that seems extraneous to their perception of their roles.

Our respondents were most likely to report being aware of advertisements for products specific to their types of cancer. This finding is in line with prior surveys of general DTCA awareness, which have demonstrated that participants are more likely to pay attention to advertisements for treatments of the diseases they have. For example, asthmatics have been reported to be twice as likely to be aware of advertisements for an asthma drug than those without asthma.[17]

Prior studies of non–cancer-related DTCA have found consistently high levels of consumer awareness[13,18] and have suggested that a combination of baseline media exposure, attitudinal factors, and medication experiences are likely to influence whether or not patients ask for a medication after having seen an advertisement.[19,20] We found that patients with cancer, despite being highly aware of CR-DTCA, were unlikely to discuss a medication with their cancer doctors or nurses (only 17.3% of those aware). This finding is consistent with a prior survey among oncology nurse practitioners, which reported that, although 94% of respondents had received at least one request for a cancer-related medication by a patient who had seen an advertisement, only 40% experienced one to five requests per week.[21]

A survey of consumers in Minnesota found that prescription requests after non–cancer-related DTCA were increased among respondents who viewed themselves as having greater influence on their physician.[22] Interestingly, in the current study, the likelihood of discussing a medication among those aware of CR-DTCA was not associated with patients' preferences for involvement in medical decision making. Instead, such requests seem to be associated with less favorable overall impressions of cancer care, although this finding is only exploratory because of the lack of variability in cancer care ratings reported by our respondents.

In this cohort, in contrast to the variably positive and negative attitudes towards DTCA reported by general consumers,[4,23,24] perceptions of CR-DTCA were mostly positive. We were especially interested to find that patients who reported fewer than 4 years of college had better overall impressions; for example, this group was significantly more likely to feel that CR-DTCA led to better discussions with their cancer doctors or nurses. This finding may provide insight into how CR-DTCA actually functions with respect to educating patients. In the context of self-efficacy theory, it has been argued that if DTCA consolidates existing knowledge, those who are more educated about health will have more positive impressions and that, if it actually develops new knowledge, those with lower levels of education will be more positive.[25] On the other hand, the fact that, regardless of educational attainment, approximately one in 10 respondents who were aware of CR-DTCA reported that it reduced their confidence in their providers' judgment is provocative, and this suggests that the educational potential of CR-DTCA may come at a price.

We recognize several limitations to our work. Most importantly, as a single-institution study at an academic cancer center, our study population is not likely to reflect the broad spectrum of patients with cancer in the United States. Next, although we specifically asked patients only to identify medications they had seen or heard advertised, it is possible that they mistakenly identified medications that they had merely taken or heard mention of in clinic; because we did not include a decoy drug in our list of prompted medications, we could not determine if there was acquiescent response bias. Our work may also have been affected by participation bias: the patients who agreed to answer our survey also may have been more likely to be aware of CR-DTCA, as they are by their nature more likely to actively participate in activities related to their health. In addition, respondents may have been reluctant to admit that they successfully pressured their providers into prescribing a medication (ie, social desirability bias). Finally, we did not measure the impressions of oncology providers, their actual behaviors, or the clinical appropriateness of any DTCA-driven conversations or requests.

The growing use of DTCA in mass media suggests that this practice is effective in driving sales of drugs, tests, or devices. In contrast, we found that, although patients with cancer were highly aware of CR-DTCA and had mostly positive impressions of the same, the impact of CR-DTCA on patient-provider communication and treatment seems limited. Why then, are cancer products advertised to patients? One answer may lie in the price of cancer-related products: as cancer medications are often several orders of magnitude more expensive than other types of less specialized drugs, CR-DTCA may prove profitable if it can stimulate even a relatively small number of prescriptions. Another reason may more be more indirectly related to the cost of cancer treatments. In their economic model that describes how DTCA affects pharmaceutical markets, Brekke and Kuhn[26] proposed that companies benefit from DTCA when detailing competition is modest, which happens when investing in detailing is expensive. As an important component of detailing is the provision of samples to providers for use with patients, it is possible that the prohibitive cost of doing so with oncologic medications makes detailing relatively expensive and, thus, makes CR-DTCA more profitable.

In summary, although patients with cancer are highly aware of CR-DTCA, they report that it prompts few changes in therapy. For clinicians who worry about the undue impact of CR-DTCA on the management of their patients, our data are reassuring. In addition, the fact that our respondents were mostly satisfied with discussions resulting from CR-DTCA suggests that patients value the resulting patient-clinician dialogue. On the other hand, changes in treatment prompted by marketing—even if infrequent—can have serious implications for patient care, and future research should thus include a rigorous assessment of the appropriateness of such changes.

AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

The author(s) indicated no potential conflicts of interest.

AUTHOR CONTRIBUTIONS

Conception and design: Gregory A. Abel, Harold J. Burstein, Nathanael D. Hevelone, Jane C. Weeks
Financial support: Gregory A. Abel, Jane C. Weeks
Administrative support: Gregory A. Abel
Provision of study materials or patients: Gregory A. Abel, Harold J. Burstein
Collection and assembly of data: Gregory A. Abel, Nathanael D. Hevelone, Jane C. Weeks
Data analysis and interpretation: Gregory A. Abel, Harold J. Burstein, Nathanael D. Hevelone, Jane C. Weeks
Manuscript writing: Gregory A. Abel, Harold J. Burstein, Nathanael D. Hevelone, Jane C. Weeks
Final approval of manuscript: Gregory A. Abel, Harold J. Burstein, Nathanael D. Hevelone, Jane C. Weeks

REFERENCES

1. Wilkes M, Bell R, Kravitz R: Direct-to-consumer prescription drug advertising: Trends, impact, and implications. Health Aff (Millwood) 19:110-128, 2000

2. Donohue JM, Cevasco M, Rosenthal MB: A decade of direct-to-consumer advertising of prescription drugs. N Engl J Med 357:673-681, 2007

3. Kaphingst KA, DeJong W: The educational potential of direct-to-consumer prescription drug advertising. Health Aff (Millwood) 23:143-150, 2004

4. Robinson AR, Hohmann KB, Rifkin JI, et al: Direct-to-consumer pharmaceutical advertising: Physician and public opinion and potential effects on the physician-patient relationship. Arch Intern Med 164:427-432, 2004

5. Shuchman M: Drug risks and free speech: Can Congress ban consumer drug ads? N Engl J Med 356:2236-2239, 2007

6. Prescription drugs: Improvements needed in FDA's oversight of direct-to-consumer advertising, in US General Accountability Office (ed): Report to Congressional Requesters. Washington DC, US Government Accountability Office, 2006, pp 1-19

7. Baciu A, Stratton K, Burke S: The future of drug safety: Promoting and protecting the health of the public. Washington, DC, Committee on the Assessment of the US Drug Safety System Board on Population Health and Public Health Practice,

Institute of Medicine, The National Academies Press, 2006

8. Abel GA, Lee SJ, Weeks JC: Direct-to-consumer advertising in oncology: A content analysis of print media. J Clin Oncol 25:1267-1271, 2007

9. Boden WE, Diamond GA: DTCA for PTCA: Crossing the line in consumer health education? N Engl J Med 358:2197-2200, 2008

10. Jagsi R: Conflicts of interest and the physician-patient relationship in the era of direct-to-patient advertising. J Clin Oncol 25:902-905, 2007

11. Groves R, Fowler F, Couper M, et al: Survey Methodology. Hoboken, NJ, Wiley-Interscience, 2004

12. Weisberg H, Krosnik J, Bowen B: An Introduction to Survey Research, Polling, and Data Analysis. Thousand Oaks, CA, Sage Publications, 1996

13. Weissman JS, Blumenthal D, Silk AJ, et al: Consumers' reports on the health effects of direct-to-consumer drug advertising. Health Aff (Millwood) W3-82-95, 2003 (suppl)

14. Consumer Assessment of Healthcare Providers and Systems Survey 3.0 (CAHPS). Rockville, MD, Agency for Healthcare Research and Quality, 2006

15. Health Information National Trends Survey (HINTS). Bethesda, MD, National Cancer Institute, 2005

16. Malin JL, Ko C, Ayanian JZ, et al: Understanding cancer patients' experience and outcomes: Development and pilot study of the Cancer Care Outcomes Research and Surveillance patient survey. Support Care Cancer 14:837-848, 2006

17. Bell RA, Kravitz RL, Wilkes MS: Direct-to-consumer prescription drug advertising and the public. J Gen Intern Med 14:651-657, 1999

18. Four in 10 Americans Say They Have Trouble Paying for Drugs or Skip Prescriptions or Cut Pills Due to Cost. Harvard School of Public Health/Kaiser Family Foundation/USA Today. http://www.hsph.harvard.edu/news/press-releases/2008-releases/poll-usa-today-kaiser-harvard-prescription-drugs.html

19. Peyrot M, Alperstein NM, Van Doren D, et al: Direct-to-consumer ads can influence behavior: Advertising increases consumer knowledge and prescription drug requests. Mark Health Serv 18:26-32, 1998

20. Sumpradit N, Fors SW, McCormick L: Consumers' attitudes and behavior toward prescription drug advertising. Am J Health Behav 26:68-75, 2002

21. Viale PH, Sanchez Yamamoto D: The attitudes and beliefs of oncology nurse practitioners regarding direct-to-consumer advertising of prescription medications. Oncol Nurs Forum 31:777-783, 2004

22. Schommer JC, Singh RL, Hansen RA: Distinguishing characteristics of patients who seek more information or request a prescription in response to direct-to-consumer advertisements. Res Social Adm Pharm 1:231-250, 2005

23. Aikin K, Swasy J, Braman A: Patient and physician attitudes and behaviors associated with direct-to-consumer promotion of prescription drugs—summary of FDA survey research results, final report. Washington, DC, United States Food and Drug Administration, Division of Drug Marketing, Advertising, and Communications, 2004

24. Murray E, Lo B, Pollack L, et al: Direct-to-consumer advertising: Physicians' views of its effects on quality of care and the doctor-patient relationship. J Am Board Fam Pract 16:513-524, 2003

25. Hoek J, Maubach N: Consumers' knowledge, perceptions, and responsiveness to direct-to-consumer advertising of prescription medicines. N Z Med J 120:U2425, 2007

26. Brekke KR, Kuhn M: Direct to consumer advertising in pharmaceutical markets. J Health Econ 25:102-130, 2006

