

## Recognizing Misleading Pharmaceutical Marketing Online

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Financial disclosure: Dr. Bursztajn has been retained by plaintiff and defense attorneys in pharmaceutical and medical product litigation.

**Abstract** (110 words)

In light of decision-making psychology, this article details how drug marketing operates across established and novel web domains, and identifies some common misleading trends and influences on prescribing and patient-initiated medication requests. The Internet has allowed pharmaceutical marketing to become more salient than ever before. While the Internet's growth has improved the dissemination of pharmaceutical information, it has also led to the increased influence of misleading pharmaceutical marketing. Such mismarketing is especially concerning in psychiatry, since psychotropics generate considerable revenue for drug companies. In a climate of resource-limited drug regulation and time-strapped physicians, we recommend improving both independent monitoring and consumer awareness of Internet enabled, potentially misleading, pharmaceutical marketing influences.

## 1. Introduction

Although the Internet has existed for a few decades, its widespread use is a relatively recent phenomenon. Internet use in general, and specifically with regard to health information, has increased enormously over a short period of time (1). Already in 2003, nearly two-thirds of American adults went online, and nearly two-thirds of these adults had searched for health information at least once in the previous year (2). The growth of online information services and patient forums can be seen as an encouraging development. These resources facilitate an unprecedented support community for millions of patients and provide invaluable health information to otherwise isolated communities. Physicians also find them useful (3). At the same time, concerns continue to surround the many new ways in which the Internet has increasingly permitted pharmaceutical companies to bypass traditional safeguards in the doctor-patient relationship by marketing products directly to consumers (e.g., 4). “Consumers” include patients as well as their prescribing physicians, since in order for a prescription to be sold it must be deemed necessary by a doctor, as well as desired by a patient. Pharmaceutical companies, therefore, seek to influence both physicians and patients through “provider-directed” and “direct-to-consumer” marketing, respectively. The majority of these marketing efforts are provider-directed, although both marketing types effectively sell medications (e.g., 5).

Although direct-to-consumer marketing is not restricted to the Internet, the Internet as a medium introduces its own host of intricacies, as it operates within a different time frame and architecture compared to other communication media. Specifically, unlike other communication media, the Internet allows for instant communication, regardless

of geographical distance, location, or accuracy of information transmitted. Furthermore, its structure is not specified by any specific design, but is the self-organized product of a combination of technological capabilities and human needs. Its fluid and ever-evolving nature allows for the invention of new and often unpredictable domains and applications, many of which have been effectively used by the pharmaceutical industry — such as tracking a user’s browsing history in order to specifically tailor banner advertisements (6). The global nature of the Internet also defies restrictions on direct-to-consumer marketing imposed by all countries except the U.S. and New Zealand (7). As a result, just about any user worldwide may encounter unregulated and unmonitored pharmaceutical marketing online. Clearly, online marketing efforts are not simply repurposed print or broadcast media campaigns.

## **2. Misleading Pharmaceutical Marketing**

When might influencing health care consumers (an integral objective of pharmaceutical marketing) be characterized as misleading? While pharmaceutical marketing is sometimes construed as conventional marketing (8), the exceptionality of drug marketing lies both in its unique consequences — for both patient health and the health care system generally — and in the nature of the patient-physician contract that it can undermine. Even conventional marketing techniques are highly problematic within a medical context, since such techniques may have detrimental downstream effects on patient health and trust in health care. Inaccuracies, imbalances, failures to meet accepted scientific standards, and other misleading drug marketing techniques can lead to increased health care costs (when patients are persuaded to buy new drugs instead of cheaper alternatives, including non-pharmaceutical treatments), injury or death (when

patients are persuaded to buy drugs for which there exist safer alternatives, or toward purposes for which the drugs are not fully approved) (9), and eroded patient trust in the reliability of health care (when patients believe that physicians with conflicts of interest are explicitly or implicitly placing their own financial interests above the best interests of their patients) (8). Since patients have the right to the most objective, scientific treatments, and since physicians take a professional oath to meet this standard of care, marketing that jeopardizes the objectivity (or even *perceived* objectivity) of this care can be understood to constitute mismarketing.

Finally, much work in psychology, social science, and medical ethics (for reviews, see 8 and 10) has shown that it is not only impaired patients who are influenced by misleading pharmaceutical marketing, but also the general population (8; 11; 12; 13).

### **3. Conflicts of Interest in Online Pharmaceutical Marketing**

Given that the pharmaceutical industry is for-profit, it not only has an interest in maximizing health, but also a separate and often conflicting interest in increasing the number of prescriptions written for its products. Pharmaceutical companies therefore continue to search for new and creative ways to maximize revenue, with increasing investment in online drug marketing — online ad spending alone is projected to increase by \$830 million over the next three years (14). In principle, this behavior is regulated by the FDA's "Fair Balance" requirement, which states that drug marketing must not be false or misleading, and must include drug risks presented in a balanced manner (15). Yet some pharmaceutical manufacturers have repeatedly admitted to failing to meet this requirement, and on several occasions have pled guilty to illegal

marketing. Instances of pharmaceutical mismarketing are cause for special concern in psychiatry, since psychotropic medications are major revenue generators for drug companies. In 2010, four psychotropics were among the top twenty of all prescribed drugs in the US (16), and five were among the top twenty in sales revenue (17). Regardless of the financial incentives that pharmaceutical companies have to market their products, medicine's primary ethical interest is to ensure the maximal health and wellbeing of patients (18). Whenever this aim is jeopardized, it is the first priority of the health care profession to undo the circumstances that endanger it.

#### **4. Online Domains of Pharmaceutical Mismarketing**

We will now discuss how some of the most common formats of online pharmaceutical marketing can be exploited to bias physicians and patients, how this marketing should be better specified so as to be less misleading, and the common presentational trends and ethical principles that emerge from this kind of marketing. Some of these cases have been addressed by the FDA, while others have not. That some cases remain unaddressed could indicate that they are so novel that the FDA has not yet fully considered or noticed them. If the agency is indeed aware of these cases and presentations, it may simply lack sufficient staff to regulate them.

##### *4.1 Search Engines*

Quick and easy to use, search engines are often the first portal of inquiry for clinical information. However, most users do not look beyond the first two pages of search results (19). Whereas 81% of physicians use search engines to answer a clinical question,

more than half finish their search at the first webpage viewed (20). The importance of the first search result is underscored by studies showing that medical searches of this kind are rarely just exploratory; rather, two-thirds of e-patients (21) and three-fourths of e-physicians search for a specific medication by name (20). Some drug companies use search engine optimization techniques (22), and their advertisements frequent the top of search inquiries — especially if the medication is searched by name (20). Among doctors who use search engines, 92% click on a link at the top of the search results page (20). Since website objectivity is not a crucial factor in most non-medically related searches, there is typically little reason for e-users to doubt the importance and usefulness of search results in these instances. The pharmaceutical industry, however, has a clear incentive to profit through its sites, and so the objectivity of these sites cannot be assumed. When patient health is at stake, it is important that users be presented first and foremost with sources completely free of bias or potential for bias. As such, it may be helpful to introduce fuller disclosure of website sources at the search result level, as this could inform which links e-users click from the search results page.

In 2009, the FDA warned 14 major drug companies that their search engine advertisements were misleading (e.g., 23). The companies had not included sufficient information online regarding medication risks. Companies often feature these risks in small print at the bottom of a webpage, in small textboxes that sometimes require the viewer to scroll to read them, or two or more clicks away. In 2010, Google took what appears to have been a self-initiated step toward improving credibility of medication searches when it altered the order of non-advertisement search results displayed. Since these changes, the first official link in a medication search is the medication's NIH URL, which provides detailed, unbiased drug information, including side effects. This

improvement, though commendable, has not altered the display order for medical condition search results, some of which promote the prescription and use of specific medication brands. For example, although only four of the top 50 Google/Yahoo! search results for “schizophrenia” in a 2008 study led to overt drug company websites, more than half of all the sites had identifiable commercial funding (24). A nearly identical study found similar results when “PTSD” was the search term (25). The 75% of web-searching doctors who search for information on a particular medical problem (21) can unknowingly be exposed to prescription-promoting information presented by pharmaceutical companies.

#### *4.2 Drug Company Websites*

Since one-third of physicians’ and many of patients’ search engine terms are branded medication names (20), it is important to consider the influence of drug company websites, which may mislead viewers as any other form of marketing can. A recent meta-analysis of pharmaceutical company-funded mental health web sites found that their content leaned significantly more towards biogenetic causes and medical treatments (as opposed to psychosocial causes and treatments) than their financially independent counterparts (26). Drug websites’ structures and layouts influence users’ perceptions of website credibility (27). Pharmaceutical companies often display prominent photographs, fonts, and graphics on their product pages. By contrast, important safety information is sometimes ‘hidden in plain view,’ thereby satisfying the FDA’s “Fair Balance” requirement while still being hardly noticeable. On several occasions, the FDA has sent warning letters to companies that have failed to include drug risk information, included this information a few mouse clicks away, or



recommended their drugs for unapproved uses (e.g., 28). Even if companies adequately communicate risks through words, they may still convey biased messages via photos, videos, and other graphics, all of which may be more attention-grabbing (e.g., because of their placement and dynamic character). Although such Internet practices are commonplace in conventional marketing, they may quickly become problematic in a medical context. Visual presentations of this kind can be used to convey salient, emotionally appealing messages that illustrate, and sometimes magnify, drug benefits, but seldom drug side effects or alternative treatments (even when the visuals accompany drug risk and treatment information). The user, whose attention is drawn, for instance, to moving images of smiling, energetic beneficiaries of a medication's therapeutic effects, may not notice the small print detailing side effects and contraindications. Such misleading portrayals may soften the impact of drug risk information or distract e-users from that information altogether.

Some pharmaceutical companies also use what are called 'unbranded' websites to provide information about diseases that can be treated with medications they manufacture. Often, drug companies do so without revealing their sponsorship of these sites (29). In 2010, the FDA warned pharmaceutical giant Novartis about its sponsorship of three distinct websites that provided information on different types of cancer. All three sites, disguised as informational, promoted Gleevec (a Novartis product) for unapproved uses and dosages, while underplaying the drug's risks (30). One site was falsely portrayed as "independently operated and not managed by" Novartis. The site repeatedly endorsed Gleevec as a treatment option, but identified no other drugs in the same class. Despite the FDA's warnings, consumers continue to want access to these promotional sites (31). This preference may indicate a lack of public awareness

regarding the influential nature of these sites, or the extent to which physicians and patients depend on such information for rapid relief from the uncertainty that may compound suffering.

One benefit of the Internet as a marketing medium, in contrast with print and other media, is that its content may always be modified — its presentation quickly and easily improved — to be less misleading. Particularly under the vigilance of the FDA, there have been noticeable steps toward fair balance in company websites and links. That said, the editable nature of the Internet is a double-edged sword: in the time it takes for the FDA to correct one inaccuracy, a number of new issues may appear elsewhere, especially whenever companies market their drugs under multiple domain names.

#### *4.3 Email Lists, Blogs and Wikis*

Domains that promote discussion among typically anonymous individuals, such as email lists, blogs, and wikis, relieve authors of many of the usual constraints on communication, such as disclosures of conflicts of interest and other reputational information. Even when email lists require conflict-of-interest disclosures, such rules can be ignored. In the extreme, these domains can host fraudulent testimonials from avatars, who may be employed to deceive, working within what are perceived to be trusted information channels among patients and caregivers. There has been little research into the magnitude of these adverse impacts on care giving, presumably because of the confidential nature of many of these services.

Wikipedia and other user-edited “consensus” resources, helpful as they can be when

information is disseminated responsibly, present unique challenges to informed decision making, since anyone online — including pharmaceutical companies — can contribute to the content of these sites. While some of these websites have policies “strongly” discouraging page editing by parties carrying conflicts of interest (32), no measures currently exist to prevent such editing. Moreover, although Wikipedia encourages conflict-of-interest disclosures (32), there is no way of ensuring that these occur. In fact, none of the major medically related wikis — Ganfyd, AskDrWiki, Medcyclopedia, WikiDoc, and Medpedia — address conflicts of interest. Although the extent to which pharmaceutical companies have edited wiki content is unknown, it has been discovered that at least some Wikipedia entries are written by corporations, including pharmaceutical companies (33). Employees of the pharmaceutical giant AstraZeneca and of the global health care company Abbott, for example, reportedly used company computers to delete negative information about drugs they sell, promoting a unilaterally positive view of their products (33). Manufacturers may also promote their medications on wiki pages featuring conditions their products treat — potentially even conditions for which their products are not FDA-approved. Such misleading practices may contribute to persistent misunderstandings concerning the appropriate use and dosage of medications, undermining the autonomy of informed decision making.

#### *4.4 Health Information Services*

Health information services, geared mainly toward medical professionals, often promote pharmaceutical interests while appearing to be objective sources of clinical knowledge. For example, in its first email to subscribers, the service MDLinx calls itself

“the *only* way to stay on top of the medical literature.” The service also emails pharmaceutical advertisements presented as newsletter “updates,” but claims to avoid pharmaceutical representative influence by “putting you in command of the representative’s visit”: subscribers get to choose which of the virtual, soliciting pharmaceutical representatives are allowed to disseminate product information to them. However, framing the interaction this way may introduce an illusion of control (34), since it exploits an innate human tendency to underestimate the probability of negative outcomes in situations over which one has perceived control. Otherwise cautious subscribers are more likely to believe they have little incentive to safeguard against manipulation, as well as little disincentive to engage in risky interactions with representatives.

Yet regardless of patients’ or physicians’ beliefs, pharmaceutical representatives have an incentive to selectively disclose and/or oversimplify study results to maximize sales. Furthermore, direct interactions with representatives do not facilitate exposure to the full range of drugs available on the market. Rather, these interactions typically favor brand-name drugs over generics, since manufacturers of the latter have fewer resources to devote to drug service funding. Finally, these subtle framing techniques can divert attention from the primary problem surrounding email “updates” that feature pharmaceutical advertisements — namely, that they may influence physicians to select drugs that are most marketed over those that are most effective. A recent investigation exemplified information-processing and decision-making tensions of this kind: the health information service WebMD admitted to connections with Eli Lilly and other drug and device companies (35); the *New York Times* described the website as “permeated with pseudomedicine and subtle misinformation,” framing “health

information commercially, using the meretricious voice of a pharmaceutical rep” (35). Therefore, health information services may sometimes facilitate the very kind of marketing influence they claim is absent.

## **5. Conclusion**

In this commentary, we have explored how misleading pharmaceutical marketing on the Internet can exist within and morph across different web domains. Specifically, we examined the domains of search engines, drug company websites, email lists, blogs and wikis, and health information services. In analyzing these domains, we found techniques of mismarketing that were both largely domain-specific (e.g. deleting negative drug information on medical wikis, using search engine optimization techniques, and deploying avatars) and domain-general (e.g. failing to reveal financial conflicts of interest, hiding drug risks in ‘plain view,’ and displaying salient visuals that conflict with drug information provided).

These observations are important because patients, physicians, and various organizations increasingly use the Internet to convey and search for health information. We argue that online mismarketing is a serious legal and ethical problem with specific indicators, and occurring across many of the domains in which health information is distributed. Since each of these domains features its own host of idiosyncrasies, future research should investigate whether the best solutions will need to be domain-specific or whether a more general solution is preferable. Most likely, the optimal solution will operate at both specific and general levels. Although some solutions to offline forms of pharmaceutical mismarketing have previously demonstrated some success (11),

innovative strategies may be needed to implement similar solutions within online contexts. Furthermore, if we are to weed out both overt and covert forms of misleading marketing then solutions will need to be both strict and clear.

We think the present article is best viewed as a case study of how influential mismarketing within pharmaceutical marketing can occur across online contexts. The domains discussed here were chosen because they appear to be among the most commonly used today. However, they are not an exhaustive list, and some currently popular domains include social networks (e.g., Facebook), social news and entertainment websites (e.g., Reddit), image (e.g., Flickr) and video (e.g., YouTube) hosting websites, and mobile health software (e.g., Epocrates). Future research can also investigate pharmaceutical marketing within these domains in order to assess the extent to which such marketing could be characterized as misleading.

Although solutions to online pharmaceutical mismarketing are beyond the scope of this article, some promising methods for implementing solutions may already exist — such as independent surveillance and evaluation systems. For example, the FDA's surveillance system, the Truthful Prescription Drug Marketing and Promotion Program (aka the Bad Ad Program), relies on prescribers and the general public to identify and report pharmaceutical misinformation. That said, the FDA has found that the program is costly and appears underutilized among doctors and the public, with only 239 reports filed in the program's first eight months (36). As another example, The Swedish nongovernmental website evaluation organization, Health on the Net Foundation (HON), administers a seal of approval (called the HONcode) to web sources it considers to be objective, high quality, and transparent (32). Nevertheless, HONcode-certified

sites are checked only periodically (starting one year after they receive the approval seal) or after the foundation's monitoring services have detected a consumer complaint or technical malfunction (37).

Although these systems are not perfect, they seem to represent a step in the right direction. For now, the most effective solution may be to simply raise awareness, such as through more academic publications on this subject, or greater incorporation of this information into continuing medical education courses and electronic health alerts.

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