

# Pharmaceutical Company Internet Sites As Sources of Information About Antidepressant Medications

Mark A. Graber<sup>1,2</sup> and Michelle Weckmann<sup>1,3</sup>

- 1 Department of Family Medicine, University of Iowa College of Medicine, Iowa City, Iowa, USA
- 2 Department of Emergency Medicine, University of Iowa College of Medicine, Iowa City, Iowa, USA
- 3 Department of Psychiatry, University of Iowa College of Medicine, Iowa City, Iowa, USA

## Abstract

**Objective:** To determine the informational content of nine pharmaceutical company websites about the antidepressant medication marketed by the company.

**Method:** A structured, explicit review of materials found on pharmaceutical company websites about nine antidepressants for which no generic drug is available was conducted using eight popular search engines. The accessibility of these websites was also determined using these search engines.

**Results:** Of 72 searches (one for each drug using each search engine), 46 yielded the pharmaceutical company website within the top 10 links. When outliers were removed, the company website was found in the top 10 links for 45 of 56 searches.

All of the websites contain information of an advertising and emotive nature. Of the nine company websites, three contain anecdotal information; only two mention electroconvulsive therapy and four mention other types of drug therapy; and only one mentions the tradenames of other drugs. None of the websites mention drug costs, only one has efficacy statistics for the company's drug and, although all of the websites mention at least one adverse effect of the company's drug, only one lists percentages for adverse effects.

**Conclusion:** The information about drugs for treating depression on pharmaceutical company websites aimed at consumers is limited and makes it difficult for consumers to compare drugs.

The Internet and its digital information library, the World Wide Web (WWW), is rapidly becoming the vehicle of choice for patients accessing health information. Fifty-nine million individuals in the US alone have access to the WWW,<sup>[1]</sup> and 57% of these have used the WWW to access medical information.<sup>[2]</sup> By one estimate, approximately

800 000 users per day from the US look for medical information on the WWW.<sup>[2]</sup> Objective clinical information is available on the WWW.<sup>[3-5]</sup> However, in addition to scientifically rigorous information, users find commercials, anecdotes and speculation.

The major pharmaceutical companies have a presence on the WWW. However, how these websites

**Table I.** Antidepressants and their related websites

Drug	Website
Citalopram	www.celexa.com
Venlafaxine	www.effexor.com
Fluvoxamine	www.luvox.com
Paroxetine	www.paxil.com
Fluoxetine	www.prozac.com
Mirtazapine	www.remeron.com
Nefazodone	www.serzone.com
Bupropion	www.wellbutrin.com
Sertraline	www.zoloft.com

contribute to the informational needs of patients is unknown. It is known that pharmaceutical company print advertising frequently does not serve to educate,<sup>[6]</sup> contains misleading information<sup>[7]</sup> and omits information about adverse effects.<sup>[8]</sup> Additionally, there are often no data supporting the claims made in the advertisements.<sup>[9,10]</sup> A previous study<sup>[11]</sup> found that information about depression on the WWW is of poor quality.

The purpose of this paper is to examine the information about antidepressant drugs published on pharmaceutical company websites.

## Methods

In the first part of the study, the tradenames of nine widely prescribed antidepressants<sup>[12]</sup> (table I) for which generic equivalents are not available (except for Prozac<sup>®</sup>,<sup>1</sup> for which a generic has recently been released) were entered into eight of the most popular search engines [www.altavisa.com; www.excite.com; www.google.com; www.goto.com (now www.Overture.com); www.hotbot.com; www.lycos.com; www.northerlight.com; and www.yahoo.com]. These engines are ranked among the most popular by Jupiter Media Metrix and SearchEngineWatch, two companies that track the use and popularity of Internet search engines.<sup>[13,14]</sup> For each antidepressant, the rank of the link to the website of the pharmaceutical company that markets the drug was recorded.

**1** Use of tradenames is for product identification only and does not imply endorsement.

Subsequently, a structured, explicit review of the patient-oriented pharmaceutical company websites for these same nine drugs was conducted. Websites were assessed for the content listed in table II by two investigators working independently. These characteristics were chosen because, in the opinion of the investigators, this information is required to allow users or potential users of the medications to make informed decisions about the diagnosis and treatment of depression. Additionally, these characteristics allow an objective rather than a biased assessment of the site.

Any differences between the investigators' reports were resolved after the completion of the reviews by a further analysis of the website(s) in question; the investigators communicated with each other via e-mail and reached a consensus. The websites were reviewed initially in July 2001 by one of the investigators and then again in February 2002 by both of the investigators. There was little difference between the outcomes of the two review dates.

Anecdotal evidence was defined as patient stories, celebrity endorsements, etc. Advertising and emotive content was defined as pictures and other content that are not central to explaining the main properties, such as efficacy and safety, of the drug (e.g. pictures of families participating in activities together).

**Table II.** Assessment characteristics of websites for antidepressants

Anecdotal evidence included?
Advertising/emotive content included?
Diagnosis and treatment of depression discussed?
Counselling mentioned?
Discussion with healthcare worker mentioned?
Drug cost mentioned?
Electroconvulsive therapy mentioned?
Material referenced?
Other drug classes mentioned?
Other drug tradenames mentioned?
Adverse effects discussed?
Percentages for adverse effects and effectiveness provided?
Self-assessment tools included?
Prescribing information included?

## Results

Seventy-two searches were performed (one for each drug using each search engine). The first site returned by the search engines directed the user to the pharmaceutical company websites for 28 of the 72 searches (listed as a ranking of 1 in table III). Another 18 searches identified the pharmaceutical company websites within the first ten links. If the outliers are removed (fluvoxamine and use of www.Goto.com), 45 of 56 searches listed the pharmaceutical company website in the top ten hits.

As can be seen in table III, some company websites are more likely to be the initial site identified than others (e.g. the www.paxil.com site was the first site identified by six search engines, while none of the search engines identified the www. effexor.com site as the first site). Interestingly, although all of the tradenames lead to a pharmaceutical company website [www.(tradename).com], none of the generic names [www.(generic name).com] lead to a company website.

All of the websites contain information of an advertising and emotive nature (e.g. pictures) [see table IV] designed to influence the consumer's choice of drugs. Three of the nine sites contain anecdotal information including such things as personal stories and videos.

All of the websites contain relevant information about depression, including aspects of diagnosis, treatment and time course, except for the fluvoxamine website, which discusses obsessive-compulsive disorder (this is the only indication for which the drug is approved in the US) [see table IV]. How-

ever, the quality of the information varies widely, and two websites have only very limited information. A self-assessment tool, which allows users to answer specific questions in order to judge the possibility that they have depression, was present on six of the nine websites (see table IV). Only two of nine sites mention electroconvulsive therapy (ECT), and only four mention other types of drug therapy; only one mentions the tradenames of other drugs (see table IV). None of the websites mention drug costs, only one has efficacy statistics specific for the company's drug and, although all of the websites mention at least one adverse effect of the company's drug, only one of nine lists percentages for adverse effects (see table IV).

Some of these deficits can be mitigated by information aimed at prescribers that can be accessed from the same website. However, the majority of the English-speaking population of the US cannot read at a level that will make this information comprehensible.<sup>[15-18]</sup>

## Discussion

Depending on the search engine used and the drug that is searched for, it is likely that consumers searching the WWW for information about antidepressants will find a link to a pharmaceutical company website. Even though they contain more information than print advertisements, pharmaceutical company websites do not provide adequate breadth and quality of data about antidepressant medication (and depression in general) to allow patients to make informed decisions about the company's drug. The lack of efficacy and adverse

**Table III.** Rank of link displayed by search engine for pharmaceutical company website

Search engine	Effexor®	Remeron®	Luvox®	Wellbutrin®	Celexa®	Serzone®	Zoloft®	Prozac®	Paxil®
www.altavista.com	>10	6	>10	1	3	>10	>10	>10	1
www.excite.com	>10	2	>10	1	1	>10	1	1	1
www.google.com	2	1	>10	1	1	2	1	1	1
www.goto.com (now www.Overture.com)	>10	7	>10	>10	>10	>10	>10	>10	>10
www.hotbot.com	>10	3	>10	10	1	9	1	4	1
www.lycos.com	3	4	>10	1	1	1	1	1	1
www.northernlight.com	7	7	>10	10	3	>10	>10	>10	>10
www.yahoo.com	2	1	>10	1	1	2	1	1	1

**Table IV.** Information provided on pharmaceutical company websites for antidepressants

	Results
Anecdotal evidence included?	3 of 9
Advertising/emotive content included?	9 of 9
Diagnosis and treatment of depression discussed?	9 of 9
Counselling mentioned?	9 of 9
Discussion with healthcare worker mentioned?	8 of 9
Drug cost mentioned?	0 of 9
ECT mentioned?	2 of 9
Material referenced?	2 of 9 <sup>a</sup>
Other drug classes mentioned?	4 of 9 <sup>b</sup>
Other drug tradenames mentioned?	1 of 9
Adverse effects discussed?	9 of 9
Percentages for adverse effects provided?	1 of 9
Percentages for effectiveness provided?	1 of 9
Self-assessment tools included?	6 of 9
Package insert prescribing information included?	8 of 9

a One other only in information intended for users from the US.  
b One other only in a news release.

**ECT** = electroconvulsive therapy.

effect percentages for various drugs makes it difficult for patients to directly compare medicines. The deficiency of information about other drug therapies, such as ECT, also limits the usefulness of these WWW sites.

Thus, pharmaceutical company websites should not be considered as a primary resource but as direct-to-consumer advertising. Direct-to-consumer advertising can pose a problem for health professionals and lead to suboptimal prescribing.<sup>[19]</sup> Physicians report that 88% of patients request a drug by brand name.<sup>[20]</sup> Fifty percent of these patients would be disappointed if a physician did not give a requested prescription, and up to 25% would look for another physician.<sup>[21]</sup> Thus, physicians feel pressured to agree to patient requests even when the drug requested is not the physician's first choice.<sup>[22,23]</sup>

Despite their weaknesses, pharmaceutical company websites may still have a positive impact. Most patients do not need 'evidence-based' information (e.g. detailed, statistical evidence such as is found in the medical literature) about depression. Offering consumers basic information on areas such as the symptoms of depression and the adverse effects of a drug, as well as providing encour-

agement to seek treatment, might be beneficial by helping patients to comply with therapy. Most<sup>[24-27]</sup> but not all<sup>[22,28]</sup> studies suggest that patients who are well educated about their disease are more likely to keep physician appointments and take medications appropriately.

Another possibly positive aspect of pharmaceutical company websites is the role that they play in the 'medicalisation' of depression. Pharmaceutical company websites emphasise that depression is an illness, is widespread and is not a flaw in the individual. Hopefully, this will help to de-stigmatise depression and encourage users of the websites to seek treatment with both pharmacological and psychotherapeutic techniques.

The main limitation of this study is the dynamic nature of the WWW. Although all of the data were current as of February 2002, pharmaceutical companies may have updated their websites since this study was done. For example, the citalopram website now contains adverse effect percentages, but also contains more advertising. A second possible limitation is that other authors may have chosen different characteristics as being important for patient education. However, neither of these limitations invalidates the conclusions of this study. Given the overall deficiencies of the websites, the conclusion remains the same.

## Conclusions

Pharmaceutical company websites contain information about mental illness that may be useful to the consumer. However, the lack of comparisons between drugs and of specific efficacy and adverse effect data will make it difficult for users to make rational choices about drug selection.

## Acknowledgements

No sources of funding were used in the preparation of this article, and the authors have no conflicts of interest that are relevant to its contents.

## References

1. Fox S, Rainie L. Pew Charitable Trust Internet and American Life Study [online]. Available from URL: [http://www.pewinternet.org/reports/chart.asp?img=6\\_daily\\_activities.jpg](http://www.pewinternet.org/reports/chart.asp?img=6_daily_activities.jpg) [Accessed 2001 Apr 19]

2. Fox S, Rainie L. Pew Charitable Trust Internet and American Life Study [online]. Available from URL: [http://www.pewinternet.org/reports/chart.asp?.img=6\\_internet\\_activities.jpg](http://www.pewinternet.org/reports/chart.asp?.img=6_internet_activities.jpg) [Accessed 2001 Apr 10]
3. NIH Cancer Trials [online]. Available from URL: <http://cancertrials.nci.nih.gov/> [Accessed 2001 Aug 11]
4. CDC Travel Information [online]. Available from URL: <http://www.cdc.gov/travel/> [Accessed 2001 Aug 11]
5. MD-Consult [online]. Available from URL: <http://www.mdconsult.com> [Accessed 2001 Aug 11]
6. Bell RA, Wilkes MS, Kravitz RL. The educational value of consumer-targeted prescription drug print advertising. *J Fam Pract* 2000; 49: 1092-8
7. Kessler DA. Addressing the problem of misleading advertising. *Ann Intern Med* 1992; 116: 950-1
8. Hollon MF. Direct-to-consumer marketing of prescription drugs: creating consumer demand. *JAMA* 1999; 281: 382-4
9. Wade VA, Mansfield PR, McDonald PJ. Drug companies' evidence to justify advertising. *Lancet* 1989; 2: 1261-4
10. Anonymous. Drug advertising: is this good medicine? *Consum Rep* 1996 Jun; 61 (6): 62-3
11. Griffiths KM, Christensen H. Quality of web based information on treatment of depression: cross sectional survey. *BMJ* 2000; 321: 1151-5
12. Rhoades R, editor. The Pharmacy Times [online]. Available from URL: <http://www.pharmacytimes.com/top200.shtml> [Accessed 2001 Aug 1]
13. SearchEngineWatch.com. The Major Search Engines (updated 22 Jan 2002) [online]. Available from URL: <http://searchenginewatch.com/links/major.html> [Accessed 2002 Feb 2]
14. Sullivan D. Jupiter Media Metrix Search Engine Ratings (updated 19 Feb 2002) [online]. Available from URL: <http://searchenginewatch.com/reports/mediamatrix.html> [Accessed 2002 Feb 21]
15. Foltz A, Sullivan J. Readability level, learning presentation preference, and desire for information among cancer patients. *J Cancer Educ* 1996; 11: 32-8
16. Murphy PW. Reading ability of parents compared with readability level of pediatric patient education materials. *Pediatrics* 1994; 93: 460-8
17. Wilson FL. Measuring patients' ability to read and comprehend: a first step in patient education. *Nursingconnections* 1995; 8: 17-25
18. Estey A, Musseau A, Keehn L. Patient's understanding of health information: a multihospital comparison. *Patient Educ Couns* 1994; 24: 73-8
19. Siegel D, Lopez J. Trends in antihypertensive drug use in the United States: do the JNC V recommendations affect prescribing? *JAMA* 1997; 278: 1745-8
20. Liebman H. Consumer, heal thyself: ads for prescription drugs are popping up more frequently in consumer media. *Mediaweek* 1993; 3: 12
21. Bell RA, Wilkes MS, Kravitz RL. Advertisement-induced prescription drug requests: patients' anticipated reactions to a physician who refuses. *J Fam Pract* 1999; 48: 446-52
22. Spurgeon D. Doctors feel the pressure from direct to consumer advertising. *West J Med* 2000; 172: 60
23. Holmer AF. Direct-to-consumer prescription drug advertising builds bridges between patients and physicians. *JAMA* 1999; 281: 380-2
24. Seals TD, Keith MR. Influence of patient information leaflets on anticonvulsant drug compliance in prison. *Am J Health Syst Pharm* 1997; 54: 2585-7
25. Lowe CJ, Raynor DK, Courtney EA, et al. Effects of self medication programme on knowledge of drugs and compliance with treatment in elderly patients. *BMJ* 1995; 310: 1229-31
26. Likar LL, Panciera TM, Erickson AD, et al. Group education sessions and compliance with nasal CPAP therapy. *Chest* 1997; 111: 1273-7
27. Haynes RB, McKibben KA, Kanani R. Systematic review of randomised trials of interventions to assist patients to follow prescriptions for medications. *Lancet* 1996; 348: 383-6
28. Powell KM, Edgren B. Failure of educational videotapes to improve medication compliance in a health maintenance organization. *Am J Health Syst Pharm* 1995; 52: 2196-9

---

Correspondence and offprints: Dr Mark A. Graber, Department of Family Medicine, Pomerantz Family Pavilion, University of Iowa, 200 Hawkins Dr., Iowa City, IA 52246, USA. E-mail: [mark-graber@uiowa.edu](mailto:mark-graber@uiowa.edu)