

# Internet Availability of Prescription Pharmaceuticals to the Public

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**Background:** The Internet holds great but uncertain promise for increased access and cost control in health care.

**Objective:** To determine access to and cost of prescription pharmaceuticals over the Internet.

**Design:** An Internet search conducted during February and March 1999.

**Setting:** The Philadelphia region.

**Measurements:** Data were collected on availability and cost of medications and physician Internet visits, requirements for physician prescriptions, and geographic location of Web-based companies and consulting physicians. Costs of comparable physician visits were obtained from Medicare and managed care organizations in the Philadelphia region. Costs of medications came from five Philadelphia community pharmacies.

**Results:** Forty-six Web sites were identified. Thirty-seven sites (33 based in the United States and 4 based outside the United States) required a prescription from a personal physician or from an Internet physician consultation. Nine sites based outside of the United States did not require a prescription or physician consultation. The median cost of an Internet physician visit was \$70 (range, \$20 to \$90), more than 15% higher than that for a general practice visit in the Philadelphia region. Quality of physician consultation, physician qualifications and specialty, and geographic location were unknown. Median price per pill of the two most commonly offered medications was 10% higher on the Internet (before shipping charges) than at Philadelphia pharmacies (\$5.49 and \$4.50 for sildenafil; \$1.94 and \$1.83 for finasteride).

**Conclusions:** The Internet may expand patient access to health-related services but at overall increased cost. In addition, the quality of physician Internet care is uncertain, and potential for serious abuse exists. Patients can easily provide incorrect or false information to obtain medications. Furthermore, conflict of interest exists for Web-based firms because they profit from selling medications and physician consultations.

*Editor's Note: This article was first released on the Web site of the American College of Physicians–American Society of Internal Medicine (<http://www.acponline.org>).*

The Internet is increasingly used to provide information to and facilitate interaction among patient, practitioner, payer, and researcher. This includes Internet visits to physicians and nurses, specialist consultations and second opinions, and myriad Web sites that provide information on treatment alternatives. Investigators are exploring uses of the Internet in population-based health and medical care research. Such uses are assumed to be beneficial because they may improve access to care while moderating costs. Patients can also use the Internet to purchase health services directly. We sought to describe availability of prescription pharmaceuticals to the public through the Internet.

## Methods

We catalogued World Wide Web sites that sell prescription pharmaceuticals directly to the lay public. Various search engines, including Excite, WebCrawler, Lycos, Yahoo!, Alta Vista, and HotBot, were used to identify Internet sites that sold medications available only by physician prescription in the United States. Multiple search engines were used because each one uses different parameters to catalogue information. All information was obtained during February and March 1999. The perspective was that of a person seeking prescription medications or comparison price shopping.

Two criteria were used to “enroll” Web sites. First, sites had to be an anchor site (an actual provider of services) and not a portal site (independent Web pages that connect to the provider). Most portal sites are paid a commission by anchor sites for displaying an advertisement or taking the user to the service provider’s site (also known as “click through”). Our original search produced many portal sites but only a few anchor sites. In addition, the site had to provide prescription pharmaceuticals. The site might require a prescription or dispense medication without a prescription; likewise, the site

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might require and offer a physician consultation to obtain the prescription, or it might not make this stipulation.

Data were collected on requirements for obtaining a medication, prescription and shipping costs, availability and cost of Internet physician visits, the geographic location of the company providing the Web site and its consulting physicians, and list of medications available through the Web site.

We compared the median cost of Internet physician consultations with payments for physician visits by Medicare and managed care organizations in the Philadelphia area. We compared per pill consumer prices of the two medications most commonly offered by Internet providers, sildenafil (Viagra, Pfizer, New York, New York) and finasteride (Propecia, Merck, West Point, Pennsylvania), with prices at five Philadelphia pharmacies.

## Results

Forty-six Web sites met study entry criteria; of these, 37 required a physician consultation or prescription (or both) from the site's consulting physician or a personal physician. Of all sites surveyed, only 5 (10.7%) would reveal their geographic location (city and country) beyond any information offered on the Internet. No Web site would reveal the specific address of consulting physicians. All sites shipped the prescription directly to the purchaser.

### Site Classification

We categorized Web sites into two groups based on willingness to dispense pharmaceuticals with or without a prescription, requirements for a physician consultation, and specified geographic location (based in the United States or based outside the United States).

### *Sites That Required a Prescription or Consultation*

Thirty-three U.S. sites and 4 international sites (total, 80.4%) required a prescription from a personal physician or an online physician, with whom a consultation could be obtained for a separate fee. Prescriptions could be mailed or faxed, or the Internet site would contact the patient's personal physician directly if the patient agreed. The medication was dispensed only after receipt of a prescription and payment.

The online consultation included a general and diagnosis-specific medical history (the latter was focused on the medication requested), concomitant medication use, and a waiver stating that the patient agreed not to hold the company liable for adverse outcomes. The patient was required to provide the

number of a valid credit card. Consultation was purportedly with a physician; disclaimers noted that physicians may not reside in the same country as the patient or the firm selling the pharmaceuticals.

All suppliers in this category notified the patient by e-mail of the results of the consultation and confirmed whether the specific prescription could be purchased. No information was available on physician name, specialty, location, or qualifications. Among the U.S.-based sites, prescriptions could be refilled twice, after which another physician consultation was required. Prescriptions could be used to purchase the desired medication from the Web site, from any other Web site, or from a personal pharmacy. Web sites that were based outside the United States did not provide prescriptions that could be used outside their site and did not permit prescription refills. No sites charged for the consultation if the person was denied a prescription for a requested medication.

Among U.S. providers, all of which required a prescription or physician consultation, 22 sites sold sildenafil only; 2 sold finasteride only; 4 sold sildenafil and finasteride only; and 5 sites offered sildenafil, finasteride, loratadine (Claritin, Schering, Kenilworth, New Jersey), celecoxib (Celebrex, Searle, Skokie, Illinois), valacyclovir (Valtrex, Glaxo Wellcome, Research Triangle Park, North Carolina), bupropion (Zyban, Glaxo Wellcome), anabolic steroids, and birth control pills.

All 4 international sites (3 in the United Kingdom and 1 in New Zealand) required physician consultation or medication prescriptions. However, their prescriptions were filled in the host country and could not be filled at a U.S. pharmacy or on another Web site. These four sites sold only sildenafil, finasteride, celecoxib, and orlistat (Xenical, Roche, Nutley, New Jersey).

### *International Freelance*

Nine Web sites (19.6%), all outside the United States, were categorized as "international freelance" sites. None offered physician consultations, and none required a prescription from a personal physician. None would reveal their geographic location beyond that given on their Web site.

One site was based in Hong Kong and sold fluoxetine (Prozac, Dista, Indianapolis, Indiana), valacyclovir, and orlistat; the latter agent was not approved by the U.S. Food and Drug Administration (FDA) for marketing in the United States during the study period. One site, whose location was unknown, shipped medications from Canada directly to U.S. customers. This site sold fluoxetine, valacyclovir, orlistat, amoxicillin, finasteride, sildenafil, loratadine, bupropion, sibutramine (Meridia, Knoll Pharmaceuticals, Mount Olive, New Jersey), simvastatin

(Zocor, Merck), and anabolic steroids. One site based in Gibraltar and one site based in Switzerland sold only sildenafil. Two sites based in New Zealand sold sildenafil and orlistat; one also sold loratadine. Of three sites based in the United Kingdom, two sold only sildenafil and one sold only finasteride.

### Cost Comparisons

All comparisons of per pill price were based on the same dose. Among the 37 sites selling sildenafil, the median per pill price was \$5.49 (range, \$4.50 to \$28.40) plus shipping costs. Among Philadelphia-area pharmacies, the median per pill price was \$4.50 (range, \$4.30 to \$6.45). Among the 16 Internet sites offering finasteride, the median per pill price was \$1.94 (range, \$1.55 to \$5.20) plus shipping costs; among Philadelphia pharmacies, the median price was \$1.83 (range, \$1.55 to \$1.95). On average, these two medications were about 10% more expensive when they were obtained from a Web site than from a local pharmacy. Shipping costs, which averaged \$18 among U.S.-based Web sites and varied from \$8 to \$25 among Web sites based outside the United States, further increased the cost of medications obtained over the Internet.

Internet physician consultation fees ranged from \$20 to \$90 (median price, \$70). This fee was 16.7% higher than payment by Medicare or local managed care organizations for a primary care visit in the Philadelphia area (\$60). Geographic location of the company that maintained the Web site, when known, had little effect on prescription prices, and the cost of physician consultations was slightly, but not consistently, lower for firms outside the United States.

### Discussion

The Internet holds great promise for improving access to and quality of health care while reducing its cost. The popular press contains increasing discussion of use of the Internet to obtain medical services, but little empirical research about its effects has been published.

As this study showed, access to the Internet can allow easy access to pharmaceuticals and physician consultations. Patients do not need to wait for an appointment with a physician or incur the expense of traveling to a physician's office. They can also minimize the social discomfort associated with use of certain medications, need not lose time from work or other normal activities, and do not have to spend time purchasing the medication from the pharmacy. Pharmaceuticals and physician consultations can be purchased 24 hours per day, 7 days per week. Furthermore, patients can obtain medications that are not available in the United States or are

not approved by the FDA. Of note, U.S. consumers seem to be the primary target of international Internet pharmaceutical providers—all prices were quoted in U.S. dollars.

However, improved access to health care through the Internet comes at increased cost to the patient; this cost is almost never reimbursed by insurers. A U.S. patient using a U.S.-based Web site to obtain a physician consultation for a 30-day supply of finasteride would pay a 40% premium (\$68 more) for this service before shipping costs. For some patients, convenience and privacy may outweigh the added cost.

Nothing is known about the quality of Internet consulting physicians and their training or the appropriateness of medical services provided. In addition, when they are available, consulting physicians seemed to be randomly selected, perhaps from a list of physicians in many countries who agreed to provide their services for a specified fee. Ten sites (21.4%) offered detailed information on how physicians could become consultants that provide Internet visits.

Patient safety could be at risk because the quality of medications may not meet U.S. manufacturing standards, may have dissimilar chemical properties, or may differ from the efficacy doses and potency used in trials. Moreover, use of the Internet to obtain medication has various opportunities for abuse. First, there is potential conflict of interest because the company that maintains the Web site profits by selling medications and probably from physicians' consultation services. All sites requested purchasing information (such as dose and quantity of medication and a credit card number) before requesting any medical information or providing a physician consultation (much like most hospitals and physician offices in the United States).

Second, it is easy to provide false or incorrect information to obtain a prescription. Giving incorrect or false information was not encouraged, but it was indirectly facilitated by preselected click-off choices available to the purchaser. For example, a medical history question asking whether the patient had had a complete physical examination and blood tests in the past year would already have a preselected answer of "yes." Such information, if incorrect, can be dangerous in terms of drug interactions and side effects of prescribed medication. In addition, a wide variety of medication quantities were available to purchasers, increasing the potential for resale abuse.

The FDA maintains a lengthy list of international Web sites that are prohibited from sending prescription medications to the United States. This list can be found at [http://www.fda.gov/ora/oasis/ora\\_oasis](http://www.fda.gov/ora/oasis/ora_oasis)

\_det.html. None of these banned sites were found in this survey.

Special attention needs to be focused on international freelance sites, which do not fall under the FDA shipping ban on firms that engage in dubious practices. International freelance sites were willing to sell any medication, no matter how dangerous or potentially open to abuse by purchasers, without a physician consultation or prescription. Use of an international Web site may inadvertently put the patient in jeopardy of contravening U.S. or another country's laws in addition to putting their health at risk. Thus, the patient must ask whether the benefit of Internet use to obtain prescription medications

(improved access and wider freedom of choice) is worth the higher monetary cost plus the potential increased health risk over the standard means of seeking care.

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### Personae

In an effort to bring people to the pages of *Annals*, the editors invite readers to submit photographs of people for publication. We are looking for photographs that catch people in the context of their lives and that capture personality. *Annals* will publish photographs in black and white, and black-and-white submissions are preferred. We will also accept color submissions, but the decision to publish a photograph will be made after the image is converted to black and white. Slides or prints are acceptable. Print sizes should be standard (3" × 5", 4" × 6", 5" × 7", 8" × 10"). Photographers should send two copies of each photograph. We cannot return photographs, regardless of publication. We must receive written permission to publish the photograph from the subject (or subjects) of the photograph or the subject's guardian if he or she is a child. A cover letter assuring no prior publication of the photograph and providing permission from the photographer for *Annals* to publish the image must accompany all submissions. The letter must also contain the photographer's name, academic degrees, institutional affiliation, mailing address, and telephone and fax numbers.

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