

tients. Home-based phototherapy may reduce inconvenience and cost, but there is little information on the safety or efficacy of this approach. While there was not a high level of improvement in PASI scores in this study, subjects tolerated the treatment well and were generally satisfied with the treatment.

This study used home-based narrowband UV-B light units fitted with an electronic control that provides a set number of treatments. When these treatments have been used, patients must contact their physician for a new code to get additional treatments. This provides an additional safety measure to prevent long-term use without supervision.

Limitations of this study include small study population, a relatively short duration of therapy, and a conservative escalation of light dose. The lack of burning and modest efficacy may reflect that the subjects received approximately one-quarter of the recommended UV dose (standing 12 in from the light unit vs 6 in). However, we did not reach a plateau in PASI by week 12, so ultimate efficacy levels might be higher. Perhaps a more aggressive UV exposure, such as standing closer to the unit or longer exposure times, would have been more effective at clearing lesions.

This small pilot study demonstrated good tolerability of home narrowband UV-B phototherapy and oral acitretin therapy. The efficacy was sufficient that subjects expressed interest in continuing home phototherapy after the study period. The data from this small trial complement extensive trial and clinical practice experience with office-based phototherapy plus retinoid combination regimens.

Christopher B. Yelverton, MD, MBA
Brad A. Yentzer, MD
Adele Clark, PA-C
Daniel J. Pearce, MD
Rajesh Balkrishnan, PhD
Fabian T. Camacho, MS
Ann Boles, RN, CCRC
Alan B. Fleischer Jr, MD
Steven R. Feldman, MD, PhD

Correspondence: Dr Feldman, Wake Forest University School of Medicine, Department of Dermatology, Medical Center Boulevard, Winston-Salem, NC 27157-1071 (sfeldman@wfubmc.edu).

Author Contributions: Dr Feldman had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. *Study concept and design:* Yelverton, Pearce, and Feldman. *Acquisition of data:* Yelverton, Clark, and Fleischer. *Analysis and interpretation of data:* Yentzer, Balkrishnan, Camacho, Boles, Fleischer, and Feldman. *Drafting of the manuscript:* Yelverton, Yentzer, and Camacho. *Critical revision of the manuscript for important intellectual content:* Clark, Pearce, Balkrishnan, Camacho, Boles, Fleischer, and Feldman. *Statistical analysis:* Balkrishnan and Camacho. *Obtained funding:* Feldman. *Administrative, technical, and material support:* Yelverton, Yentzer, Clark, Pearce, Balkrishnan, Camacho, Boles, Fleischer, and Feldman. *Study supervision:* Fleischer and Feldman.

Financial Disclosure: Dr Feldman has received research, speaking, and/or consulting support from Connetics and Stiefel. He has received research, speaking and/or consultant support from Galderma Laboratories, Connetics, Astellas, Abbott, Warner Chilcott, Centocor, Amgen, Photomedex, Genentech, Biogenidec, Coria, Pharmaderm, Ortho Pharmaceuticals, Aventis Pharmaceuticals, Roche Dermatology, 3M, Bristol-Myers Squibb Dermatology, and Novartis.

Funding/Support: Funding for this project was provided by Connetics. The Center for Dermatology Research is funded by a grant from Galderma Laboratories.

Role of the Sponsors: The sponsors had no role in the design and conduct of the study; in the collection, analysis, and interpretation of data; or in the preparation, review, or approval of the manuscript.

Additional Contributions: Home UV-B phototherapy units were provided by National Biological Corp.

1. Spuls PI, Rozenblit M, Lebwohl M. Retrospective study of the efficacy of narrowband UVB and acitretin. *J Dermatolog Treat.* 2003;14(suppl 2):17-20.
2. Yelverton CB, Kulkarni AS, Balkrishnan R, Feldman SR. Home ultraviolet B phototherapy: a cost-effective option for severe psoriasis. *Manag Care Interface.* 2006;19(1):33-39.
3. Lewis V, Finlay AY. 10 years experience of the Dermatology Life Quality Index (DLQI). *J Investig Dermatol Symp Proc.* 2004;9(2):169-180.
4. Lowe NJ, Prystowsky JH, Bourget T, Edelstein J, Nychay S, Armstrong R. Acitretin plus UVB therapy for psoriasis: comparisons with placebo plus UVB and acitretin alone. *J Am Acad Dermatol.* 1991;24(4):591-594.
5. Carlin CS, Callis KP, Krueger GG. Efficacy of acitretin and commercial tanning bed therapy for psoriasis. *Arch Dermatol.* 2003;139(4):436-442.

Patient-Centered Care in Dermatology: An Online System That Provides Accessible and Appropriate Information to Guide Patients' Decision Making

Health care is traditionally structured around the conventional office consultation. Complaints about this system include insufficient counseling on management options and insufficient attention to patient concerns and beliefs.¹ In addition, patients frequently cannot remember the basic structure of their care plan.² A patient-centered access model has been suggested to improve availability, appropriateness, preference, and timeliness.³

The University Hospital Zürich in Switzerland has offered an Internet-based question-answering service to the general public free of charge since 1999 (https://www2.onlineberatung.usz.ch/question/faq.aspx?qst_cat_id=17). While most inquiries are answered by a general practitioner, some are referred to specialists, dermatologists being the most requested specialists, which suggests that our specialty is in generally high demand.

Methods. From 2000 to 2005, 16 106 questions were submitted to the University Hospital Zürich Internet-based question-answering service. Of these, 937 questions from 648 online questioners (hereinafter called *contacts*) concerned dermatology (5.8%). A Web link to an Internet-based questionnaire was e-mailed to these dermatology contacts. Institutional review board approval was obtained for the study.

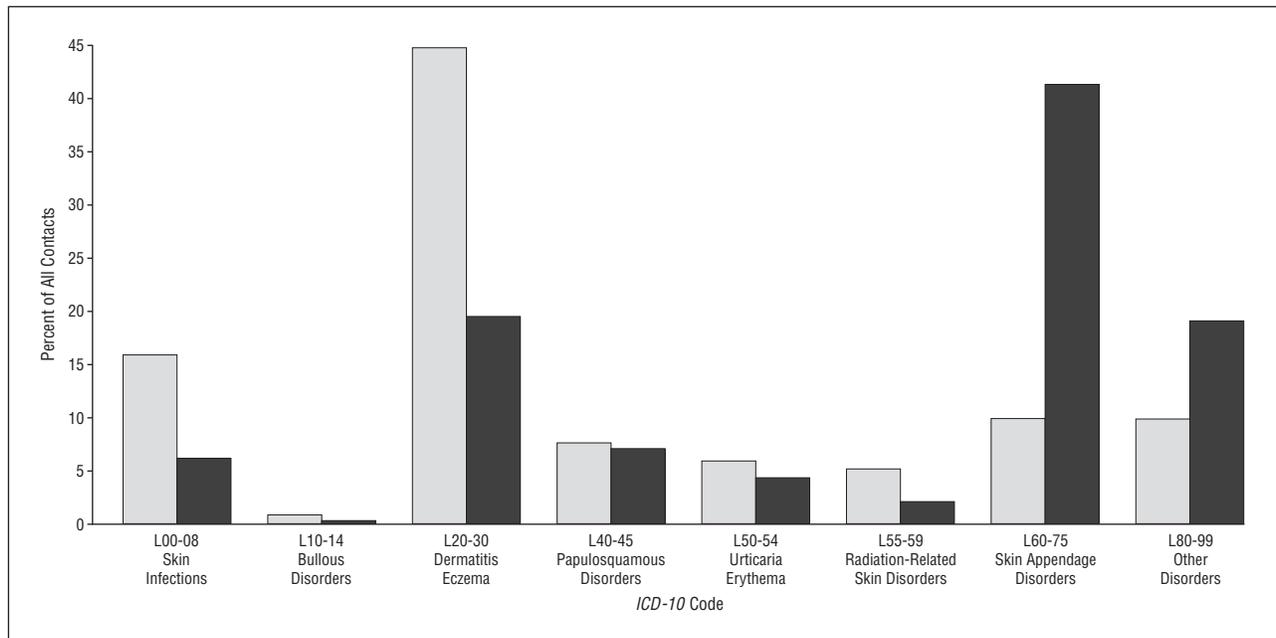


Figure 1. Distribution of diagnoses according to *International Statistical Classification of Diseases, 10th Revision (ICD-10)*, code within the patient population of the outpatient clinic of the Department of Dermatology (gray bars) ($n=18\,928$ patients in 2004) and the contact population of the health online consultants of the University Hospital Zürich (black bars) ($n=937$ dermatological questions out of 16 106 total contacts). Sex distribution was 49% male and 51% female at the Dermatology Department, and 38% male and 62% female within the online contact population. The distribution is significantly different between the 2 populations ($P<.001$ by the χ^2 test). Within the outpatient population, inflammatory skin diseases such as dermatitis (L20-L30) were most frequent. Within online contacts, skin appendage diseases (L60-L75) were the most common.

Results. A total of 175 contacts returned the questionnaire (27%). The mean age of contacts was 35 years; 38% were male, 62% female. The countries of residence included Switzerland, 95.6%; Germany, 2.7%; and France, 0.5%. A general physician answered 75% of questions, while a board-certified dermatologist answered 25%.

The differences in distribution of *International Statistical Classification of Diseases, 10th Revision (ICD-10)*, diagnoses were significant within the online contacts as well as within dermatology department outpatients (**Figure 1**). Both populations differed significantly in diagnosis distribution (except for L50-L54, ie, urticaria and erythema). Inflammatory skin diseases (L20-L30) were most frequent among outpatients, while skin appendage disorders (L60-L75) were most frequent among online contacts (Figure 1). Average online contact age differed significantly: 30 years for infections of the skin and subcutaneous tissue (L00-L08) and disorders of skin appendages (L60-L75) and 43 years for papulosquamous skin disorders (L40-45) (data not shown).

For 53% of contacts, online contact was their first physician experience. For 71%, their question was answered “mostly” or “very much.” Ninety-three percent of contacts understood the answers “mostly” or “very much.” New information was provided to 46%. Fifty-seven percent of contacts considered the reply “mostly” or “very much” helpful, and 34% ultimately saw a physician. Twenty-nine percent of contacts felt that the reply substituted for an office consultation.

Online contacts usually did not intend to have an office consultation at the time of question submission (**Figure 2**). Answers recommended consultation to 61 of 106 contacts who did not originally intend going to an office visit and to 229 of 438 contacts who did have

such intention. Impact was small in the positive intention group: 48 of 61 who received positive recommendations and 31 of 43 who received negative recommendations still intended to visit a physician. Actual reported visits were far below the stated intentions in all groups: 20% of all patients who maintained their intention to visit a physician actually visited one.

However, impact was pronounced in the negative intention group: 55 of 229 who received positive recommendations and 6 of 196 who received negative recommendations subsequently intended to visit a physician. Actual reported visits were far below stated intentions in all groups. However, a change of mind in the intention group lowered the consultation rate. A recommendation to consult in the negative intention group increased the consultation rate (Figure 2).

Comment. The persons making use of our online question-answering service differed from our outpatients: they were younger, more likely female, and had different *ICD-10* diagnosis codes. Published studies report a similarly skewed population with higher income and education associated with Internet use for health information.⁴

Patient-centered access requires availability, appropriateness, preference, and timeliness.³ For half of our contacts, we were their first physician contact, indicating high availability. Most of our answers were judged to provide new information and to be comprehensible, helpful, and complete, indicating appropriateness. Contacts in need of consultation were identified, thus addressing preference. In summary, our online question-answering service delivers major components required for patient-centered access to health care with high contact satisfaction.³

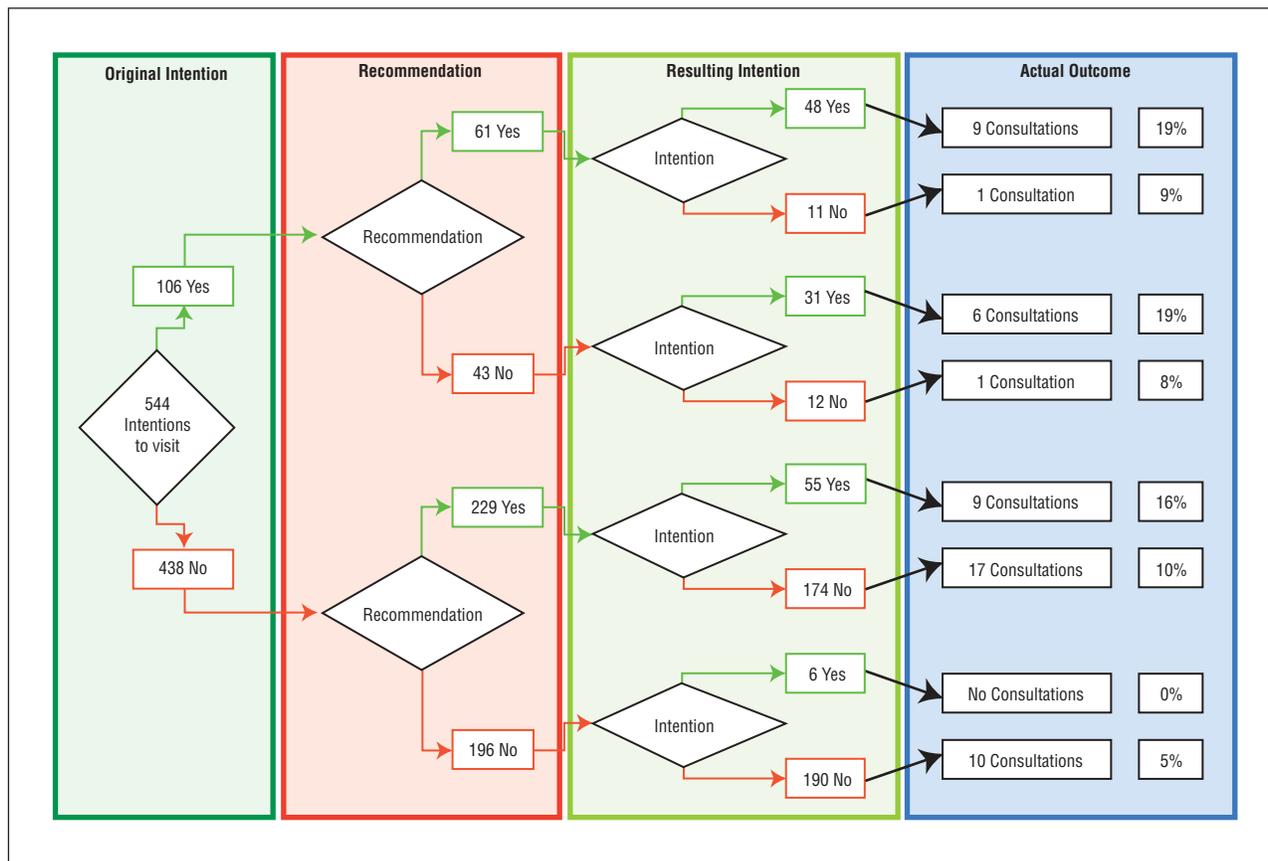


Figure 2. Intentions to consult a physician and outcomes for persons using the online question-answering service (hereinafter called *contacts*). Of the 544 contacts, 106 voiced an intention to seek consultation, and 438 did not intend to seek a regular consultation with a physician when submitting their inquiry to the online consulting physician (dark green box). The online consulting physician recommended a regular visit in 61 and 229 inquiries, respectively, and did not recommend a regular physician visit in 43 and 196 inquiries, respectively (red box). Resulting intention is shown in the light green box. Follow-up revealed low actual frequency of regular physician visits in this online contact group overall (blue box). However, recommendation to visit seemed to sway a previous intention not to visit a physician, while recommendation against a visit lowered the rate of actual physician visits. Numbers provided are absolute numbers except for percentages of actual visits over intention stated last, which are individually labeled with a percent sign.

Internet use for health care information is widespread, but its contribution to patient-centered access is unclear.⁵ Our recommendations affected intended and actual office visits. The larger portion of our contacts, those who originally did not intend visiting a physician for consultation, responded to our recommendations with increased consultations.

In summary, online contacts report high rates of satisfaction as well as changes in intended and actual office visits following online recommendation. Our online question-answering service seems to bridge the gap between self-help and a conventional office visit. The appropriateness and cost-efficiency of our recommendations were not verified and will have to be assessed in further studies.

Günther F. L. Hofbauer, MD
 Rachel P. Neuhaus Bühler, BA
 Lars E. French, MD
 Maria Brockes, MD
 Eberhard Scheuer, PhD

Correspondence: Dr Hofbauer, Dermatology Department, University Hospital, Gloriastrasse 31, 8091 Zürich, Switzerland (hofbauer@usz.ch).

Author Contributions: Study concept and design: Hofbauer and Brockes. Acquisition of data: Neuhaus Bühler,

Brockes, and Scheuer. Analysis and interpretation of data: Neuhaus Bühler, French, and Brockes. Drafting of the manuscript: Hofbauer and Neuhaus Bühler. Critical revision of the manuscript for important intellectual content: Neuhaus Bühler, French, Brockes, and Scheuer. Statistical analysis: Neuhaus Bühler and Scheuer. Obtained funding: Neuhaus Bühler. Administrative, technical, and material support: Neuhaus Bühler and Brockes. Study supervision: Hofbauer, Neuhaus Bühler, French, and Brockes.

Financial Disclosure: None reported.

Funding/Support: This study was supported by the Department of Online Health and the Department of Dermatology, University Hospital Zürich.

Additional Contributions: Günter Burg, MD, provided help and support with this project.

- Marvel MK, Epstein RM, Flowers K, Beckman HB. Soliciting the patient's agenda: have we improved? *JAMA*. 1999;281(3):283-287.
- Kravitz RL, Hays RD, Sherbourne CD, et al. Recall of recommendations and adherence to advice among patients with chronic medical conditions. *Arch Intern Med*. 1993;153(16):1869-1878.
- Bergeson SC, Dean JD. A systems approach to patient-centered care. *JAMA*. 2006;296(23):2848-2851.
- Vinker S, Weinfass M, Kasinetz LM, Kitai E, Kaiserman I. Web-based question-answering service of a family physician: the characteristics of queries in a non-commercial open forum. *Med Inform Internet Med*. 2007;32(2):123-129.
- Marcin JP, Nesbitt TS, Cole SL, et al. Changes in diagnosis, treatment, and clinical improvement among patients receiving telemedicine consultations. *Telemed J E Health*. 2005;11(1):36-43.