drome had multiple retinal hamartomas, cortical dysplasia, a subependymal giant cell astrocytoma, and renal angiomylipomas. He was found to have a TSC2 (OMIM 191092) mutation. On dermatological examination, he had angiofibromas, 2 ungual fibromas, 2 shagreen patches, multiple hypomelanotic macules of the limbs and trunk, and dental enamel pits. Bier spots were noted on the upper limbs.

**Patient 4.** A young patient having TSC with angiofibromas and epilepsy had cortical dysplasia and renal angiomyolipomas. On dermatological examination at age 18 years, he manifested angiofibromas, dental enamel pits, and hypomelanotic macules, as well as pale macules of the limbs, especially on the forearms, which were noted to be Bier spots.

**Discussion** | In this series, 4 of 29 patients with TSC (14%) had nevus anemicus or Bier spots. Nevus anemicus has been reported in patients with type 1 neurofibromatosis, phakomatosis pigmentovascularis, and port-wine stains. Bier spots are a common insignificant finding. These vascular manifestations could be minor cutaneous markers of TSC, occurring in a subgroup of patients with the disease. Compared with the aesthetically disfiguring facial angiofibromas, these minor skin signs may go unnoticed and are usually of no concern to the patient. Future research is needed to determine if these signs are significant within the context of TSC.

**Chloé Sachs**

**Dan Lipsker, MD, PhD**

**Author Affiliations:** Faculté de Médecine, Université de Strasbourg, Strasbourg, France (Sachs, Lipsker); Clinique Dermatologique, Hôpitaux Universitaires de Strasbourg, Strasbourg, France (Sachs, Lipsker).

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**Corresponding Author:** Dan Lipsker, MD, PhD, Clinique Dermatologique, Hôpitaux Universitaires de Strasbourg, 1 Place de l’Hôpital, F-67091 Strasbourg CEDEX, France (dan.lipsker@chru-strasbourg.fr).

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**Analysis of Online Ratings of Dermatologists**

Online physician rating sites (PRSs) allow patients to recommend, grade, and publicly comment on physician performance. In 2015, PRSs experienced up to 6.4 million hits. Despite increases in the popularity of PRSs, little information exists regarding the online ratings of dermatologists. We investigated the patterns of ratings of dermatologists on commonly used PRSs to better understand the information available to patients online. We hypothesized that the mean online ratings for dermatologists are high, consistent with ratings reported in the literature for other subspecialties.

**Methods** | One hundred dermatologists were randomly selected from August 2 to 28, 2015, from a public list of 11 848 members of the American Academy of Dermatology. Institutional review board approval was not obtained because no patients were involved, data were obtained from public sources, and data are presented in aggregate. Five popular websites were searched for physician ratings: ZocDoc.com, Yelp.com, RateMDs.com, Vitals.com, and Healthgrades.com. Mean overall ratings (all websites used a 5-star scale), total number of ratings, and the number of negative comments were recorded for each dermatologist per website. A repeated-measures design was used to determine if mean 5-star ratings were consistent across different websites, and unpaired 2-sided t tests were used to analyze whether sex or subspecialty training had effects on ratings. The numbers of negative written comments were compared using a χ² test (critical value, 7.82; α = .05) to determine if certain websites had significantly fewer negative comments than other websites. Data analysis was conducted from August 19 to October 10, 2015.
Results | Of the 100 dermatologists included, 55 were men (55%) and 25 were subspecialists (pediatric dermatology, dermatopathology, Mohs surgery). Individual dermatologists appeared on approximately 2 websites (mean, 2.41). Across all websites, the mean ratings for dermatologists were high, at more than 3.5 stars (Table 1). No significant differences were found between the ratings on the 3 PRSs with the most profiles of dermatologists (N = 37; P = .33). The results of t tests confirmed that neither sex (P = .32) nor specialty training (P = .89) had significant effects on mean ratings. Four of the 5 websites offer the option for users to write comments. Only 1 website (ZocDoc.com) had significantly fewer negative comments than the other websites (χ² = 12.02; P = .007) (Table 2).

Discussion | Patients are increasingly using social media to make health care decisions. A 2014 study found that 61% of patients used PRSs before choosing a physician, and 20% used online reviews to evaluate their current physician.4 Across all websites, the mean ratings for dermatologists were high, at more than 3.5 stars (Table 1). No significant differences were found between the ratings on the 3 PRSs with the most profiles of dermatologists (N = 37; P = .33). The results of t tests confirmed that neither sex (P = .32) nor specialty training (P = .89) had significant effects on mean ratings. Four of the 5 websites offer the option for users to write comments. Only 1 website (ZocDoc.com) had significantly fewer negative comments than the other websites (χ² = 12.02; P = .007) (Table 2).

<table>
<thead>
<tr>
<th>Physician Rating Site</th>
<th>Dermatologists Rated, No.</th>
<th>Total Ratings, No.</th>
<th>Mean Ratings per Dermatologist, No.</th>
<th>Mean Overall Rating†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthgrades</td>
<td>87</td>
<td>924</td>
<td>10.6</td>
<td>4.00</td>
</tr>
<tr>
<td>Vitals</td>
<td>81</td>
<td>1172</td>
<td>14.5</td>
<td>4.04</td>
</tr>
<tr>
<td>RateMDs</td>
<td>42</td>
<td>296</td>
<td>7.1</td>
<td>3.98</td>
</tr>
<tr>
<td>Yelp</td>
<td>19</td>
<td>121</td>
<td>6.4</td>
<td>3.60</td>
</tr>
<tr>
<td>ZocDoc</td>
<td>12</td>
<td>1231</td>
<td>102.6</td>
<td>4.58</td>
</tr>
</tbody>
</table>

Table 2. Percentage of Negative Comments Reported for Each Physician Rating Site*

<table>
<thead>
<tr>
<th>Physician Rating Site</th>
<th>Profile Comments, No.</th>
<th>Negative Comments, %</th>
<th>χ²</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitals</td>
<td>58</td>
<td>34.0</td>
<td>1.98</td>
<td>.38</td>
</tr>
<tr>
<td>RateMDs</td>
<td>42</td>
<td>25.0</td>
<td>0.11</td>
<td>.99</td>
</tr>
<tr>
<td>Yelp</td>
<td>19</td>
<td>39.1</td>
<td>5.73</td>
<td>.13</td>
</tr>
<tr>
<td>ZocDoc</td>
<td>12</td>
<td>8.8</td>
<td>12.02</td>
<td>.007</td>
</tr>
</tbody>
</table>

* All 5 websites used a 5-star rating system.

* Data not included for Healthgrades as the website does not allow written comments.

The data we gathered from PRSs are easy for patients to access when making decisions about health care. Overall, we confirmed our hypothesis that, as with other subspecialties, online ratings of dermatologists are consistently high. Furthermore, we conclude that, while a range of reviews is helpful to improve practice, websites that prompt more patient feedback are less susceptible to outlier bias. Therefore, we encourage dermatologists to familiarize themselves with the various features of PRSs to better use this social media resource to reach their patient population and improve patient satisfaction.

Christie Riemer, BS
Monica Doctor, MA
Robert P. Dellavalle, MD, PhD, MSPH

Author Affiliations: Michigan State University College of Human Medicine, Grand Rapids (Riemer); University of Central Florida College of Medicine, Orlando (Doctor); Department of Dermatology, University of Colorado Anschutz Medical Campus, Aurora (Dellavalle); Dermatology Service, US Department of Veterans Affairs, Eastern Colorado Health Care System, Denver (Dellavalle); Department of Epidemiology, Colorado School of Public Health, University of Colorado Anschutz Medical Campus, Aurora (Dellavalle).

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Corresponding Author: Robert P. Dellavalle, MD, PhD, MSPH, Dermatology Service, US Department of Veterans Affairs, Eastern Colorado Health Care System, 1055 Clermont St, PO Box 165, Denver, CO 80220.


Author Contributions: Dr Dellavalle and Ms Riemer had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: All authors.
Acquisition, analysis, or interpretation of data: All authors.
Drafting of the manuscript: Riemer, Doctor.
Critical revision of the manuscript for important intellectual content: All authors.
Statistical analysis: Riemer, Doctor.
Administrative, technical, or material support: Riemer, Doctor.
Study supervision: Dellavalle.

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Use of Health Care Resources and Costs After Patient Nonattendance in Dermatology

Patient nonattendance occurs when patients miss appointments without notifying their health care professionals in advance. In dermatology, nonattendance rates range from 7.8% to 31.0% of scheduled appointments. The consequences of nonattendance range from compromised care to wasted appointment slots, decreased efficiency, and diluted residency training. We seek to define the effect of nonattendance on subsequent use of health care resources and health care spending in dermatology.

Methods | The study included patients within the Partners Healthcare System who were seen at the dermatology office of Brigham and Women’s Hospital in Boston or in an associated suburban satellite clinic and who missed at least 1 dermatology appointment from February 1, 2009, through July 30, 2010. Of the 2289 patients who met these criteria, 250 randomly selected urban patients and all 237 suburban patients were included. Patients with a primary care physician outside Partners Healthcare System (128 patients) and those younger than 18 years at the time of the appointment (6 patients) were excluded. Patients with a primary care physician outside Partners Healthcare System (128 patients) and those younger than 18 years at the time of the appointment (6 patients) were excluded, leaving 353 patients. This retrospective study was approved by the institutional review board of Partners Healthcare System, who waived the requirement for a patient to consent to receive treatment. Patient data were deidentified.

We reviewed each patient’s medical record to collect demographics, medical history, and dermatology-specific health care use in the 3 years after the missed appointment (final date of follow-up, July 30, 2013). We performed cost calculations using 2009-2010 figures from the Center for Medicare & Medicaid Services and 2011-2013 data from the Agency for Healthcare Research and Quality. The cost of a missed appointment, including a physician’s time and unused space, was defined as 50% of the cost of an attended appointment. Sensitivity analysis used to test costs from 25% to 75% of an attended appointment did not affect our conclusions.

The composite cost measure reflects missed and attended outpatient appointments, dermatology-related emergency department visits and inpatient stays, and biopsies. Surgical procedures, imaging, prescriptions, and other costs related to treatment were not included. Patients with high rates of use were defined as the top 10% of patients in relation to the cost measure. Changing this definition to those with values ranging from 5% to 15% did not affect the analysis.

Data were analyzed from February 1, 2009, through July 30, 2010. We performed a univariable analysis of all potential predictive variables and a multivariable analysis on all variables with P < .15.

Results | Overall, 47 of 353 patients (13.3%) failed to attend a dermatology appointment. Most of these patients (245 [69.4%]) had subsequent use of dermatology services after nonattendance. Costs were concentrated in a small proportion of these patients, with the top 10% (n=35) responsible for 60.9% of costs (Figure). The overall dermatologic spending was divided among inpatient costs (31.6%), emergency department costs (5.0%), attended outpatient appointments (51.0%), missed outpatient appointments (7.0%), and biopsies (4.4%). A multivariable analysis identified that missing a return visit (adjusted odds ratio, 3.69; 95% CI, 1.27-13.46) and having a history of nonmelanoma skin cancer (adjusted odds ratio, 3.97; 95% CI, 1.53-10.31) were associated with high rates of use (Table).

Figure. Distribution of Dermatologic Spending Across Nonattendees

A. Cumulative cost

B. Total cost

Graphical representation of distribution of overall cost. The top 1%, 5%, 10%, and 25% of patients by total spending are responsible for, respectively, 31.8% ($133 000), 50.6% ($211 000), 60.9% ($254 000), and 81.6% ($340 000) of total health care costs.