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## How well do family physicians manage skin lesions?

Results of this prospective cohort study put them on a par with their dermatologist colleagues

### Practice recommendation

Family physicians can feel comfortable that most patients whom they treat with skin disorders improve (B).

The bite of a brown recluse spider is dangerous, leading to necrosis and possibly death, right? That supposition is widely held and backed by studies.<sup>1,2</sup> In fact, conventional wisdom says if a person is bitten by a brown recluse spider, serious complications are the norm and the best course of action is aggressive treatment in a hospital.

The studies supporting this view, however, were conducted in tertiary care settings, which do not always represent primary care settings.<sup>3,4</sup> When Cacy and Mold<sup>5</sup> examined the characteristics of brown recluse spider bites in outpatient settings, they found that 43% of patients healed within 2 weeks and only 1 in 149 patients required hospitalization.

*Is it likely other skin disorders seen in primary care also have clinical courses more favorable than when seen in tertiary care centers?* This was one of our hypotheses, and we structured our study to determine the percentage of the skin lesions that improved after evaluation and management by family physicians.

### How do FPs compare with dermatologists?

Dermatology literature boasts about the superiority of the dermatologist in diagnostic ability, cost savings, and cancer prevention when compared with primary care physicians.<sup>6-10</sup> Studies have evaluated the skill level of primary care physicians compared with dermatologists in identifying skin disorders when tested with color transparencies, computer images, and slides—however, rarely with actual patients.<sup>7,9-16</sup> Some studies have suggested a higher rate of referral for skin problems than for other non-dermatologic conditions.<sup>14,17,18</sup>

Often the outcome of interest in these studies is disease-oriented, judging a physician's diagnostic ability, rather than examining a patient-oriented outcome, such as resolution of lesion or patient satisfaction.

Thus, the secondary aims of our study were to observe how family physicians diagnose and treat the lesions, and to gauge their concordance with dermatologists' assessments and plans. We hypothesized that, in an office setting, family physicians would provide effective and efficient treatment for most patients who present with new skin lesions, and that there is high diagnostic concordance between the 2 specialties.

We first share our study findings, and

then provide details of our Methodology and Results.

### ■ Family physicians excel at dermatologic care

Our study demonstrates that most skin conditions diagnosed and managed by family physicians improve. At day 7, 84% of patients who were contacted reported their skin lesions were “better” or “much better.” Moreover, patients said they were highly satisfied with their care. Referrals to subspecialists were infrequent.

These findings counter those from previous studies questioning primary care physicians’ care of dermatologic conditions. We believe it is likely that patients in previous studies reflected different populations than are typically seen by family physicians.<sup>18–20</sup> Another difference may be that family physicians used other resources to assist with their diagnosis and treatment decisions. As we hypothesized, family physicians had good correlation with dermatologists in both diagnosis and treatment, and skin lesions improved.

### Important study limitations

We relied on patient reports of improvement. While self impression of degree of improvement is a patient-centered outcome, there may be instances in which inappropriate or insufficient treatment may produce temporary symptomatic relief and mask true improvement.

Although the patients’ primary care physicians were not involved in the follow-up process, it is possible they felt some social pressure to report higher levels of improvement or satisfaction.

Though we attempted to enroll all eligible patients, some patients seen for skin conditions may not have been captured. As we met our planned enrollment rates, we believe we captured most of the eligible encounters.

Some studies have questioned primary care physicians’ abilities to properly diagnose skin cancers.<sup>21,22</sup> Our study was

**TABLE 1**

### Characteristics of study sample

CHARACTERISTIC	N (%)*
<b>Age of participants (years)</b>	
0–17	42 (17)
18–35	80 (33)
36–64	107 (44)
≥65	15 (6)
<b>Gender</b>	
Male	112 (46)
Female	131 (54)
<b>Race/ethnicity</b>	
Hispanic†	27 (11)
Non-Hispanic	
White	186 (77)
African American	13 (5)
Asian	13 (5)
American Indian/Inuit	2 (1)
<b>Highest education level (older than 18 years)</b>	
High school or less	26 (13)
Some college/college grad	111 (56)
Graduate school	63 (31)
<b>Employment status (older than 18 years)</b>	
Employed	163 (82)
Unemployed	35 (18)
<b>Insurance status</b>	
Insured	228 (94)
Uninsured	15 (6)
<b>Skin lesion primary reason for visit</b>	
Yes	189 (73)
No	70 (27)

\* Totals may not always equal 244 due to missing data.

† Hispanics may be of any race.

not designed or powered to detect skin cancers or the number, if any, of missed diagnoses of skin cancer.

### Cues for teachers of family medicine

Most diagnoses fell within a limited set of diagnostic categories that probably reflect a distribution of skin disorders more typical within family medicine than in dermatology clinics. This range of disease defines a set of diagnostic skills, information resources, and treatment

**TABLE 2**

**Skin lesions seen in study sites**

<b>DURATION OF LESION PRIOR TO VISIT (N=258)</b>	<b>N (%)</b>
30 days or less	161 (62%)
31–60 days	15 (6%)
61–90 days	9 (4%)
91 days or longer	73 (28%)
<b>TEN MOST COMMONLY DIAGNOSED SKIN LESIONS (N=257)</b>	<b>N (%)</b>
Eczema	73 (28%)
Dermatophyte infection	28 (11%)
Benign nevus	26 (10%)
Bacterial infection	14 (6%)
Seborreic keratosis	11 (4%)
Bites	11 (4%)
Herpes	10 (4%)
Warts	10 (4%)
Viral exanthem	8 (3%)
Actinic keratosis	7 (3%)
<b>FREQUENCY OF REPORTED TREATMENT ELEMENTS</b>	<b>N (%)</b>
Prescription	158 (59%)
Recommended over-the-counter medication	63 (24 %)
Reassurance with no other treatment	43 (16%)
Recommended prevention	29 (11%)
Removed lesion	28 (11%)
No treatment but arranged follow-up	15 (6%)
Degree of certainty with diagnosis*	Mean: 8.4 (SD: 1.7)
Referred to another provider (n=263)	23 (9%)
Unless otherwise noted, the sample size is 267 lesions.	
* 1=Not at all certain, 10=Very certain.	

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**Most skin conditions diagnosed and managed by family physicians improve**

plans required to make these diagnoses and manage these conditions in family practice settings. This information should help physicians involved in training family physicians to concentrate on these common categories of diagnoses. Most important, our study conducted with actual patients found that family physicians manage skin lesions effectively and efficiently, with high patient satisfaction.

**Methods**

**Study design and participants**

We conducted a multisite, 3-state (Maryland, Virginia, and Washington, DC) prospective cohort study under the auspices of the Capital Area Practice Based Research Network (CAPRICORN). Be-

tween May 24 and August 13, 2004, all patients with new skin lesions who were seen by participating physicians were expected to enter into the study. Institutional Review Board approval was obtained from Georgetown University prior to the study. Written informed consent was obtained from all physicians and patients.

**Inclusion/exclusion criteria**

A lesion was considered new if patients presented to a family physician with one or more skin lesion that had not been previously treated or examined by another physician.

Patients were ineligible if they: 1) had a lesion with unknown duration; 2) had no telephone for follow-up; 3) did not

**TABLE 3****Patients reported high satisfaction**

**NUMBER OF PATIENTS REPORTING OUTCOME (%) FOR PATIENTS WITH LESIONS EXPECTED TO IMPROVE BY FAMILY PHYSICIAN (RESOLUTION SCORE  $\geq$  7)\***

<b>Day 7 (n=234)</b>	(n=181)
Much better or better	152 (84%)
The same	24 (13%)
Much worse or worse	5 (3%)
<b>Day 28 (n=220)</b>	(n=169)
Much better or better	150 (89%)
The same	15 (9%)
Much worse or worse	1 (2%)
<b>Day 84 (n=203)</b>	(n=157)
Much better or better	147 (94%)
The same	6 (4%)
Much worse or worse	1 (2%)

\* Totals not identical with Table 2 due to loss to follow-up.

speak English or Spanish; or, 4) had a lesion resulting from trauma.

### Interventions

The initial intervention consisted of 2 parts: 1) after examining a patient, family physicians completed a 10-question survey, recording diagnosis, treatment plan, and resources used in treatment; 2) research assistants completed a 14-question survey, consisting of general patient and lesion information. Follow-up patient surveys were completed by telephone on days 7, 28, and 84.

Two university-based dermatologists helped develop the photography protocol. They specifically requested 3 digital photos of lesions under incandescent light, specific information for diagnosis, and direction for how photographs should be taken. The photographs were taken using Olympus C-5000 5MP Digital Camera w/ 3x Optical Zoom and were developed with HP photo glossy paper. The dermatologists separately reviewed the photographs blinded to the family physician's diagnosis and treatment. The dermatologists commented on diagnosis and treat-

ment plan for the first 99 patients enrolled in the study.

### Outcomes

The primary outcome was dichotomous: whether skin lesions improved or not at day 7. Secondary outcomes were measures of improvement at days 28 and 84. We also examined patients' satisfaction on a scale of 1 to 5 ("How satisfied were you with your skin care provided by your family physician?" 1=very satisfied, 5=very unsatisfied).

The categorization of acute skin lesions was developed by a modified delphi process in order to classify the lesions into groups. The principal investigator initially categorized all diagnoses and treatments. Next, 3 other members of the study (AK, BP, and DM) individually reviewed and guided categorizations. The 2 dermatologists gave the final input. This resulted in 41 categories for diagnosis and 9 for treatment.

### Statistical analysis

Descriptive statistics provided baseline characteristics for the group. Frequencies

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**At day 7, 84% of patients contacted reported their lesions were "better" or "much better"**

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**Patients were highly satisfied with care by FPs, and referral to subspecialists were infrequent**

were computed on patient, visit, and lesion characteristics, including patient improvement at days 7, 28, and 84. We also computed patient satisfaction with the care provided by their physician at 7, 28, and 84 days. Agreement rates between the family physicians and the 2 dermatologists were obtained for the subset of cases where both dermatologists agreed on the diagnosis. Similarly, the agreement rates were computed for recommended treatment using only those cases where the 2 dermatologists agreed on treatment. All descriptive statistics were computed with SPSS (SPSS, Inc, Chicago, Ill).

**RESULTS**

A total of 244 patients with 267 skin lesions were recruited by 53 family physicians during the study period. The 7-day follow-up patient survey was completed for 234 lesions (88%), the 28-day survey was completed for 220 lesions (82%), and the 84-day survey was completed for 203 lesions (76%). Study participants ranged in age from 3 months to 86 years; adults were predominantly college-educated, non-Hispanic, and white (TABLE 1). The majority of study participants (73%) reported that their skin lesion was the primary reason for their appointment.

Characteristics of the clinical encounters are presented in TABLE 2. While most skin lesions were present for 30 days or less (62%), over one quarter had been present for more than 90 days. The family physicians made 40 general dermatologic diagnoses. Only 3 lesions (1%) were considered malignant (data not shown). Family physicians reported relatively high confidence with their diagnoses (mean confidence score of 8.4, with range 1 to 10, 1=not at all certain, 10=very certain).

Other characteristics of the clinical encounters not shown in TABLE 2 are the family physicians' judgment on resolution of the lesions and diagnostic steps used in treating the lesions. In most cases, family physicians believed the lesion would resolve within 12 weeks (203 lesions re-

ceived a score of  $\geq 7$ , 0=no improvement expected, 10=complete resolution expected). There was a bimodal distribution with 144 lesions receiving a 10, while 36 received a grade of 0. To make their diagnosis, most family physicians examined other parts of the skin (70%), consulted a colleague (14%), or consulted an electronic resource (6%). Laboratory tests, skin scrapings, diagnostic cultures, Woods lamp exams, or skin biopsies were performed in a total of 10% of encounters.

TABLE 3 reports the primary outcome, patient-reported resolution of skin lesions. These data were restricted only to lesions that were expected to improve (defined as a clinician assigned resolution score  $\geq 7$ ).

Overall, patients were very satisfied with the dermatologic care provided by their family physician. On a 5-point satisfaction scale, 55% of patients reported 1, the highest satisfaction level and 34% reported 2, the next highest level at day 7. At days 28 and 84, 93% of the patients reported the 2 highest levels of satisfaction. These data exclude patients lost to follow-up. Including all participants in the denominator, the rates of either the 2 highest levels of satisfaction at day 7 was 78%, at day 28 was 76%, and at day 84 was 70%.

The overall agreements in diagnosis and treatment, respectively, between the family physicians and the dermatologists were 72% and 80%. We examined only the aspects where both of the dermatologists agreed. Interestingly, for the more common diagnoses, the agreement rates were above 80%; however, for less common diagnoses, the rates were 62%. This trend was not observed in the treatment agreements, primarily due to dermatologists recommending steroids much more often than family physicians prescribed steroids. Tables with this data are on available on the web at [www.jfponline.com](http://www.jfponline.com). ■

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#### DISCLOSURE

The authors have no conflicts of interest to report.

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**With the more common diagnoses, agreement between FPs and dermatologists was above 80%**