

# Most Common Dermatologic Problems Identified by Internists, 1990-1994

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**Background:** Internists in all settings see many patients with skin conditions. Thus, their education in dermatology is important. Information on which areas of dermatology are most commonly seen in internal medicine practices is necessary for designing effective educational programs on skin disease.

**Objective:** To determine what types of dermatologic problems internists most commonly diagnose.

**Methods:** National Ambulatory Medical Care Survey data from 1990 to 1994 were analyzed for dermatologic diagnoses. Physicians specializing in internal medicine and all its subspecialties were compared with dermatologists and with other physicians.

**Results:** The most common skin disorders diagnosed by internists were dermatitis (15.8% of all diagnoses) and bacterial skin infections (14.0% of all diagnoses). Combined, bacterial, fungal, and viral infections included 28.3% of the most common dermatologic diagnoses made

by internists. The top 10 most common diagnoses accounted for 57.9% of all skin-related diagnoses and the top 20 most common diagnoses accounted for 72.8%. Internists were more likely to see patients for bacterial skin infections, herpes infection, exanthem, urticaria, and insect bites while dermatologists more commonly saw patients for actinic and seborrheic keratoses, warts, benign and malignant skin tumors, and psoriasis.

**Conclusions:** The most common dermatologic diseases diagnosed by internists differ considerably from those diagnosed by dermatologists. Because dermatologists do much of the dermatology teaching of internal medicine residents, it is important to recognize these differences to place emphasis on the proper areas of study. Some common or serious skin conditions not often diagnosed by internists such as psoriasis and melanoma also deserve attention in internal medicine training programs.

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**T**HE CHANGING health care system has decreased patient access to all specialists, including dermatologists. Increasingly, patients are seeking care for skin problems from other physicians, and a greater number and variety of physicians are now treating skin diseases.<sup>1-4</sup> Nondermatologists have historically handled most of the patient visits for skin disease.<sup>2</sup> In fact, about 60% of all cutaneous diagnoses are made by nondermatologists.<sup>5</sup>

Skin disease is seen commonly in internal medicine since many general medical disorders have cutaneous manifestations. Furthermore, ease of access, familiarity, and managed care systems encourage patients with diseases of the skin to present initially to their internist instead of going directly to a specialist. For all these reasons, internists need strong training in dermatology.

Nondermatologists have been shown to be less able to diagnose common skin problems compared with dermatologists. McCarthy et al<sup>6</sup> reported that dermatology training programs were not adequately preparing "future primary care physicians for their increased role in the management of skin disorders." After studying one primary care center, Branch et al<sup>7</sup> concluded that "generalists have an important role in the assessment of skin disorders," and "additional training might enhance their efficiency in caring for these disorders." Granted, there is only so much time for studying dermatology during an internal medicine 3-year residency program because of the large amount of other subject matter that must be covered. McCarthy et al<sup>6</sup> reported an average of 3 weeks allotted by internal medicine programs for studying dermatology. In light of these constraints, programs should teach resi-

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## METHODS

The National Ambulatory Medical Care Survey (NAMCS) is conducted by the National Center for Health Statistics as an ongoing descriptive data collection effort regarding office-based physician practice. Sampling was limited to non-federally employed physicians principally engaged in outpatient care activities. The multistage probability sampling design was stratified by primary sampling unit (county, contiguous counties, or standard metropolitan statistical area), then by physician practices within the sampling unit, and, finally, by patient visit within the 52 weekly randomized periods. Within small practices, a 100% sample of 1 week's visits was possible. For large practices, 20% of patient visits were randomly sampled. The resulting national estimates describe the utilization of ambulatory services in the United States.<sup>8,9</sup>

The study interval of 1990 to 1994 was chosen because these were the years most recent data were available. For all patients and diagnoses, the entire 1990, 1991, 1992, 1993, and 1994 databases have, respectively, 43 469, 33 795, 34 606, 35 978, and 33 598 records that are used to estimate the experience of 704, 670, 762, 717, and 681 million annual office-based visits of all types in the United States. From 1990 to 1995, a total of 181 446 records were obtained to estimate the experience of more than 3.53 billion outpatient-based physician visits in the United States. For each visit sampled, a 1-page patient log was completed that included demographic data, reasons for patient visits, physicians' diagnoses, services provided, and referral practices.

For the purposes of this study, physicians in internal medicine, geriatric internal medicine, allergy, immunology, diabetes, endocrinology, gastroenterology, cardiology, infectious diseases, nephrology, oncology, rheumatology, aerospace medicine, critical care medicine, general

preventive medicine, hematology, pulmonary diseases, and undersea medicine were grouped as internal medicine physicians. All other specialties, except for dermatology, were grouped into a category called "other."

To define dermatologic diagnoses, *International Classification of Diseases, Ninth Revision, Clinical Modification*<sup>10</sup> codes were assessed for their relevance to dermatologic diseases. Select infectious, neoplastic, and mucous membrane conditions were included as well as codes for skin diseases. "V" codes were eliminated as were other nondermatologic diagnoses.<sup>10</sup> Data for all providers were studied to isolate those visits in which the primary diagnosis was a dermatologic diagnosis. Minor diagnoses that were subsets of major diagnoses were combined to make the data more meaningful. For example, all the various tinea infections were combined into one category called "tinea, all" since the recognition and treatment of this disease does not vary tremendously with its site (**Table 1**).

Sampling weights were applied to achieve the nationally representative estimates. All estimates derived from the NAMCS are subject to sampling variability. The relative SE is a measure of sampling variability and is related to the number of estimated patient visits. Representative relative SEs for the 1994 NAMCS are as follows: 8.1% for estimates of 10 million visits, 23.9% for estimates of 1 million visits, 33.6% for estimates of 500 000 visits, and 74.8% for estimates of 100 000 visits. Relative SE rates from earlier years are similar and details may be obtained from the National Center for Health Statistics published information.<sup>8,9</sup> Due to this similarity, we were able to use 1993 NAMCS relative SE figures to calculate the approximate relative SEs for the entire study interval.<sup>11</sup> All data management and analysis were performed with the SAS statistical software (SAS Institute, Cary, NC).

**Table 1. Diagnoses Combined for the Purpose of This Study**

Combination Diagnosis	Component ICD-9-CM* Codes	Component Diagnoses
Tinea, all	110.00-111.90	Dermatophytosis, dermatomycosis
<i>Candida</i> , all	112.00-112.90	Candidiasis
Infestation	132.00-134.90	Pediculosis, <i>Pthirus</i> infestation, acariasis, other infestations
Skin cancer	173.00-173.90 and 232.00-232.90	Carcinoma in situ of skin, does not include melanoma
Benign tumors	214.00, 214.10, and 216.00-216.90	Lipoma, blue nevus, dermatofibroma, hydrocystoma, syringoadenoma, syringoma, pigmented nevus
Dermatitis	454.10, 690.00, 690.10, 691.00, 691.80, and 692.00-692.90	Stasis, atopic, contact, seborrheic, and erythematous squamous dermatitis, neurodermatitis, eczema
Bacterial skin infections	680.00-682.90, 684.00, 686.00, 686.80, and 686.90	Carbuncle, furuncle, cellulitis, abscess, impetigo, pyoderma
Pruritus	698.00-698.90	Pruritus ani, prurigo
Alopecia	704.00-704.01	Alopecia areata and unspecified alopecia

\*International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM).<sup>10</sup>

dents to recognize which of their patients are more likely to present with skin disorders, concentrate on the skin diseases seen most commonly in internal medicine situations, and allow some time for learning which conditions warrant a referral to or consultation with a dermatologist.

Although internists see many dermatologic diseases, the conditions they diagnose may not be the same as those diagnosed by dermatologists. This is relevant because dermatologists do much of the teaching of dermatology to internal medicine trainees. This study defines the common diagnoses seen by internists to provide a ra-

**Table 2. National Ambulatory Medical Care Survey Data on Dermatology Visits\***

Specialty	All Visits	Skin-Related Visits	% of All Visits That Were Skin Related
Internal medicine	694	33 10.3	4.7
Dermatology	140	127 40.1	91
All physicians	3533	316	9

\*Visits are in millions.

tional basis for development of curricula for residency programs. This study also determines the demographics (age, race, ethnicity, and sex) of internal medicine patients with skin disease. This information can be used to prepare residents to recognize which of their patients are most likely to present with skin diseases. Our study differs from others because we (1) use recent data from 1990 to 1994, (2) use a large data pool, and (3) focus on skin conditions seen in internal medicine.

## RESULTS

### OFFICE VISITS

**Table 2** demonstrates the distribution of all office visits and those visits for skin-related problems to internists, dermatologists, and all physicians from 1990 to 1994.

### DEMOGRAPHIC DATA

The sex ratio of the patients who presented to internists with a skin-related chief diagnosis in 1990 to 1994 was comparable with those who visited dermatologists and other physicians. With regard to race and ethnicity, internists were on average more likely than dermatologists to treat minorities for skin problems. Internists are less likely to see the youngest patients and more likely to see patients in the 81- to 100-year-old age group than are dermatologists or all other physicians (**Table 3**).

### MOST COMMON DERMATOLOGIC DISEASES

**Table 4** shows that dermatitis, the most common skin condition identified by internists, accounted for 15.8% of all their dermatologic diagnoses. The next 3 most common problems combined accounted for almost a quarter of the diagnoses. Combined, the 10 most common conditions accounted for more than half of all skin-related diagnoses made by internists.

## COMMENT

From 1990 to 1994, patients in the United States made a total of 316 million physician visits for dermatologic diagnoses. These visits accounted for 9% of the total 3.5 billion visits to all physicians during this 5-year period. This is an average of 63.2 million skin-related visits per year. Compared with past data, this indicates an increase in the total number of skin-related visits; how-

**Table 3. 1990-1994 National Ambulatory Medical Care Survey Data: Sex, Ethnicity, Race, and Age of Patients With Dermatologic Diagnoses by Physician Specialty**

Characteristic	Internal Medicine, %	Dermatology, %	All Physicians, %
Sex			
Female	57.4	56.2	56.4
Male	42.6	43.8	43.6
Ethnicity			
Non-Hispanic	91.0	94	91.6
Hispanic	7.7	4.9	7.0
Race			
White	83.9	91.4	88.2
African American	9.2	4.8	7.5
Asian or Pacific Islander	6.5	3.1	3.4
American Indian or Eskimo	0.2	0.3	0.4
Age, y			
0-20	9.6	18.9	26.6
21-40	29.3	28.2	26.6
41-60	27.9	22.8	21.4
61-80	27.7	25.5	21.3
81-100	5.5	4.5	4.2

ever, the percentage of all visits pertaining to skin conditions has remained fairly constant.<sup>12,13</sup> In 1974 there were 44 million (7% of all visits) and in 1980 and 1981 there were 42 million skin-related visits per year (7.3% of all visits).<sup>12,13</sup>

Visits to dermatologists accounted for 40.3% (127 million) of the nation's office-based visits for skin problems. This number was 34% in 1974 and 50% in 1980 and 1981.<sup>12,13</sup> There is no definite trend in these numbers, but it is clear that dermatologists see a minority of the patients with skin diseases.

Nondermatologists, including internists, continue to provide a large portion of care to patients with dermatologic diagnoses. Internists had 32.5 million visits by patients whose main diagnoses were skin related from 1990 to 1994. These visits accounted for 4.7% of the total 694 million visits to internists. Internists saw 10.3% of all dermatologic visits to all physicians during this time.

Minorities and the elderly are 2 groups that make up a greater proportion of the patients with skin disease seen by internists than dermatologists. On average, internists diagnose African Americans as having skin disease nearly twice as often as dermatologists (9.2% of skin-related primary diagnoses vs 4.8%). Notably, internists see Asians and Pacific Islanders more than twice as often as dermatologists (6.5% vs 3.1%) and almost twice as often as all physicians (3.4%). One potential explanation for this phenomenon could be that minorities have less access to specialists. However, before definitive conclusions can be drawn, more research focused specifically on this subject is needed. Regardless, internists must be aware of how certain disorders may present differently in minorities than in whites and they need to be specially prepared to recognize skin conditions that are unique to minority groups. Similarly, since internists typically see many elderly patients, they should be well versed in the special skin conditions of this population. Fleischer

**Table 4. Top 10 Dermatologic Diagnoses by Specialty, 1990-1994\***

Internists		Dermatologists	
Diagnosis	No. (%)	Diagnosis	No. (%)
<i>Dermatitis</i>	5.15 (15.8)	<i>Acne vulgaris</i>	22.97 (18.0)
Bacterial skin infections	4.58 (14.)	<i>Dermatitis</i>	16.75 (13.)
<i>Tinea, all</i>	1.54 (4.7)	Actinic keratosis	14.66 (11.5)
<i>Acne vulgaris</i>	1.53 (4.7)	Skin cancer	9.74 (7.6)
Herpes zoster	1.52 (4.7)	Viral wart	8.53 (6.7)
<i>Epidermoid cyst</i>	1.31 (4.0)	Benign tumors	7.39 (5.8)
Exanthem	0.98 (3.0)	Psoriasis	6.13 (4.8)
Herpes simplex	0.80 (2.4)	<i>Epidermoid cyst</i>	3.71 (2.9)
Urticaria NOS	0.74 (2.3)	Seborrheic keratosis	3.33 (2.6)
Nonvenomous insect bite	0.72 (2.2)	<i>Tinea, all</i>	3.10 (2.4)
Top 10 diagnoses total	18.84 (57.9)	Top 10 diagnoses total	96.29 (75.6)
Top 20 diagnoses total	23.71 (72.8)	Top 20 diagnoses total	112.47 (88.3)
Grand total	<b>32.56 (100)</b>	Grand total	<b>127.44 (100)</b>

\*Diagnoses by specialty are in millions. NOS, not otherwise specified; and text in italics, conditions among the 10 most common skin diagnoses for both internists and dermatologists.

et al<sup>14</sup> looked specifically at dermatologic services provided to the elderly. They found that in 1990, internists diagnosed 13% of skin conditions in people older than 65 years, while dermatologists diagnosed 44%.

Our results show that while the skin problems commonly seen by internists are somewhat similar to those seen by dermatologists, they do differ. Both types of physicians commonly see dermatitis, tinea, acne vulgaris, and epidermoid cysts. However, internists see herpes zoster and herpes simplex infections, exanthems, nonvenomous insect bites, lupus erythematosus, dermatosis not otherwise specified, chronic leg ulcers, and *Candida* infections as a greater percentage of their dermatologic visits than do dermatologists. Dermatologists are more likely to see patients for psoriasis, seborrheic and actinic keratosis, benign skin tumors, skin cancer, warts, rosacea, pruritus, dyschromia, folliculitis, lichen simplex chronicus, and keloids than are internists.

We found that the 10 most common conditions account for 57.9% of the skin diagnoses that are made by internists. The most common of these is dermatitis, which suggests perhaps that the most important area for internal medicine skin curricula would be in the treatment of dermatitis. Proper treatment of dermatitis includes recognizing the particular type of dermatitis (contact, atopic, stasis, or seborrheic) and the appropriate choice and use of topical steroids. Additionally, diagnosis and antimicrobial treatment of skin infections are other areas that deserve special attention since infectious processes account for more than 28% of the skin diagnoses made by internists. Bacterial skin infections, tinea, herpes, *Candida*, and viral warts were all among the 20 most common skin diagnoses.

Although dermatitis and bacterial skin infections make up almost 30% of the skin conditions diagnosed by internists, the remaining 70% of diagnoses are spread widely over a vast number of diseases. This fact points to a major way that dermatologists and internists differ. Dermatologists see a much larger number of patients with skin disease than do internists. However, their 10 most common diagnoses account for more than three quar-

ters of their total number of office visits. Thus, they can become familiar with a more limited number of diseases and also be able to occasionally diagnose the rare entities. Compared with the average dermatologist, the average internist has to recognize a wider range of skin diseases in a smaller population of patients with skin disease. Making cutaneous diagnoses is understandably challenging in view of this diluted exposure. For that reason, the internist should build a strong alliance with a dermatologist to facilitate consultations on skin diseases that are not commonplace and referrals of patients who need more specialized treatments.

It is our intention that the data presented in this study be used as a rational foundation on which to build skin disease training programs for internists. Clearly, a list of 20 diagnoses is not by itself sufficient to build an entire curriculum. There are some important skin diseases that are not common but should be learned because of their serious nature. One example of such a disease is melanoma, which makes up only 0.6% of internists' skin diagnoses. As shown in Table 1, the diagnosis of melanoma was treated separately from the combined diagnosis of skin cancer that included basal cell carcinoma and squamous cell carcinoma, as well as carcinoma in situ. Furthermore, several of the most commonly occurring dermatologic processes including psoriasis (0.7% of internists' skin diagnoses) and rosacea (0.2% of internists' skin diagnoses) were not commonly diagnosed by internists. Psoriasis is a common disorder affecting 2% of the population. Its treatment falls within the capabilities of internists and, as such, it is an area with which internists should become better acquainted. It is possible, but unlikely, that these numbers are low because internists are not recognizing these diagnoses. However, these 2 conditions are easily recognizable to the nondermatologist, and thus a more likely explanation is that internists are referring patients to dermatologists for treatment.

The use of NAMCS data has several limitations. Since the data set contains figures only on outpatient practice, inpatient dermatologic educational needs cannot be assessed. Additionally, the data set does not include infor-

mation on government practices. This is only a small proportion of outpatient medicine and should not affect the conclusions. One further limitation is that there is potential for individual physician error both in making the correct diagnosis and in reporting the diagnosis with its corresponding *International Classification of Diseases, Ninth Revision, Clinical Modification*<sup>10</sup> code. However, the magnitude of the NAMCS prevents field validation of data. Physicians participating in NAMCS are asked to give their best assessment of diagnosis as either a final diagnosis or a provisional diagnosis or at least in "problem terms."<sup>15</sup> There are several categories of general conditions not otherwise specified but there is no category for "unknown" or "unsure" that would readily show a lack of proper training by any group of physicians. Physician error will in part be remedied if internists are thoroughly trained in the most common conditions and their differential diagnoses including look-alike diagnoses.

Despite limitations, this study still provides a valuable description of dermatologic problems seen by internists. In the future, further analysis of these NAMCS data comparing internists and dermatologists is warranted. Specifically, the appropriateness of therapies for particular diagnoses and payment sources are 2 areas in which comparison of the specialties would be interesting, however, they are beyond the scope of this article.

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