

Allergists and dermatologists have far more expertise in caring for patients with urticaria than other specialists

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Background: Urticaria is a common disease for which numerous treatments have been described, yet there is little information about what agents are commonly used to treat urticaria. There may be differences in the way in which urticaria is treated by different medical specialties.

Objective: The purpose of this study was to characterize the visits and treatments of urticaria in office-based practices.

Methods: National Ambulatory Medical Care Survey data from 1990 to 1997 were analyzed to determine patient populations, medications used, and physician specialties for visits of urticaria.

Results: Women accounted for 69% of all patient visits, but an equal gender distribution was observed in patients 18 years of age and younger. There was a bimodal age distribution with peak visits in patients aged birth to 9 years and 30 to 40 years. H₁ antihistamines and systemic corticosteroids were used in 56% and 14% of visits, respectively. Other medications reported as useful in the treatment of urticaria were used in 12% of visits. Allergists and dermatologists had a mean of 47 and 37 visits per physician per year, respectively, compared with all other physicians who averaged fewer than 10 visits per physician per year. Allergists were the least likely to use a corticosteroid agent (6% of visits), whereas internists were the most likely (29% of visits). Dermatology and allergy recorded a relatively large percentage of visits for urticaria that were referred for their condition by other physicians (49% and 25% of visits, respectively).

Conclusion: We observed a bimodal utilization curve for age and urticaria not previously described. H₁ antihistamines remain the mainstay in treatment of urticaria, whereas the low use of systemic corticosteroids likely reflects physicians' understanding of their secondary function in the treatment of urticaria. (J Am Acad Dermatol 2000;43:1084-91.)

Urticaria affects 15% to 25% of the population at some point during their lives,¹⁻⁴ and 1% to 2% of visits to dermatologists and allergists are for urticaria.^{5,6} Women have previously been reported to seek medical care more often than men for urticaria, with a peak incidence occurring in those aged 20 to 40 years. Acute urticaria, however, is also common in young children of either sex.^{4,6-10} Because the origin and pathogenesis of urticaria are often unclear, management can be frustrating to both patient and physician.^{11,12}

There are relatively few drugs indicated for the treatment of urticaria. These include the H₁ antihistaminic agents: hydroxyzine, cetirizine, and loratadine.¹³ However, physicians use many other agents to treat patients with urticaria. Short or prolonged courses of systemic corticosteroid agents may be used for severe or refractory episodes of urticaria and have been described as the treatment of choice for delayed pressure urticarias.^{12,14,15} Combinations of H₁ and H₂ antihistamines, tricyclic antidepressants, and β -adrenergic agents have demonstrated modest efficacy.¹⁶⁻²⁰ Other therapies reported as efficacious include danazol, stanozolol, dapsone, colchicine, leukotriene antagonists, calcium channel blockers, methotrexate, cyclosporine, and sulfasalazine.²¹⁻³⁰ Although numerous treatments have been described, there is little information about what agents are commonly used to treat urticaria.

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0190-9622/2000/\$12.00 + 0 16/1/109305

doi:10.1067/mjd.2000.109305

There may also be differences in how urticaria is treated by different medical specialties. Dermatologists and allergists receive special training in the management of all forms of urticaria.^{31,32} The purpose of this study is to characterize visits and treatment of urticaria in office-based practices. To do this, we looked specifically at the patient population, medications used, and physician specialties for visits of urticaria within the National Ambulatory Medical Care Survey (NAMCS) for 1990 through 1997.

METHODS

The NAMCS is an ongoing survey of office-based physicians conducted by the Division of Health Care Statistics, the National Center for Health Statistics, and the Centers for Disease Control and Prevention.* The sampling is limited to nonfederally employed physicians principally engaged in outpatient care activities.

Data from 1990 through 1997 contain 272,830 records used to estimate 5.76 billion office-based physician visits in the United States. For each visit sampled, a one-page patient log was completed that included demographic data, reasons for patient visits, physicians' diagnoses, services provided, and referral practices.

We identified all visits in which urticaria was the primary, secondary, or tertiary diagnosis by means of the International Classification of Diseases (ICD-9) codes 708.0 to 708.9. These diagnosis codes do not allow for differentiation of acute and chronic forms of urticaria. For each patient visit, we counted the total number of other diagnoses. These other diagnoses were defined as comorbidities, and the maximum number of comorbidities is two.

To describe the patient populations treated for urticaria, the demographic data were used to quantify the frequency of each race, ethnicity, and gender. For age differences, the mean age with standard deviations and 95% confidence intervals were determined. Next, we differentiated visits for patients older and younger than 18 years of age. To better characterize the patient distributions, we looked at the frequency of visits within incremental 10-year age categories. Based on US government estimated census populations,[†] per capita visits within each age category were determined and reported as visits per thousand people. Population distributions were similar between 1990 and 1997,

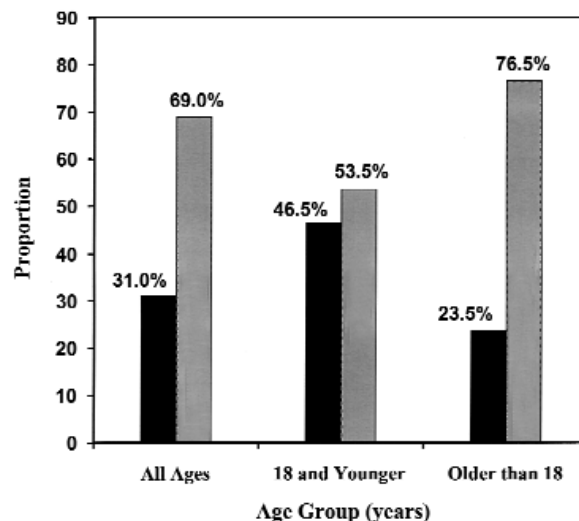


Fig 1. Age distribution of all office-based visits for urticaria in the United States from 1990 to 1997. Bars represent actual proportion of visits within each age group reported as percent of all urticarial visits. Black bars represent men's visits; gray bars represent women's visits.

so the 1994 data were arbitrarily chosen to approximate the study interval.

To characterize treatment of urticaria, we first created a list of all H₁ antihistaminic agents and systemic corticosteroid agents listed in the *Drug Facts and Comparisons*.³³ Visits with these medications were identified. To determine other treatments that were used, we examined all other physician drug mentions from the entire study interval. These drug mentions were defined as "other unrelated" when there had not been reported efficacy in the treatment of urticaria by MEDLINE search from 1966 to 1999, and "other related" agents when there had been reported efficacy in the treatment of urticaria. This latter group includes β -adrenergic agents, tricyclic antidepressant agents, H₂ antihistaminic agents, calcium channel blockers, cyclosporine, methotrexate, dapsone, stanozolol, danazol, colchicine, and sulfasalazine.¹⁶⁻³⁰

To quantify per capita physician experience, the number of nonfederal office-based physicians in each specialty was determined from the 1994 (midpoint) American Medical Association data.³⁴ We defined "allergists" as physicians included in the following NAMCS-defined specialties: allergy, pediatric allergy, allergy and immunology, and allergy and immunology/diagnostic lab immunology. Family physicians were defined as including family practice, geriatric medicine, sports medicine (family practice), and general practice. Dermatology was used as defined in the survey.

To examine factors that might affect the likelihood of corticosteroid administration, we performed a

*Documentation is available from the National Center for Health Statistics at the following website: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NAMCS/

†Documentation is available from the United States Census Bureau at the following website: <http://www.census.gov/population/estimates/nation/intfile2-1.txt>

Table I. Demographic information for urticaria visits

	All specialties (%)	Dermatology (%)	Allergy (%)	Pediatrics (%)	Internal medicine (%)	Family medicine (%)	Others (%)
Sex							
Female	69	70	59	62	85	69	71
Male	31	30	41	38	15	31	29
Race							
White	83	85	83	82	73	91	72
Black	8	9	9	9	11	2	17
Asian/Pacific Islander	9	6	7	9	16	7	11
American Indian/Eskimo/Aleut	0	0	0	0	0	1	0
Ethnicity							
Hispanic	12	9	15	15	16	11	6
Not Hispanic	88	91	85	85	84	89	94
No. of comorbid diagnoses							
0	52	65	43	65	39	46	34
1	34	27	37	29	50	38	26
2	14	8	21	7	11	16	41
Patient status							
New patient	24	33	56	9	18	18	17
Established patient	76	67	44	91	82	82	83

Table II. Age of patients seen for urticaria

	Mean age ($\pm$ SD)	Age <18 y		Age >18 y	
		Thousands of visits	%	Thousands of visits	%
Dermatology	45.6 (20.1)	179	9.1	1781	90.1
Allergy	35.1 (18.5)	177	16.4	907	83.6
Pediatrics	7.9 (12.7)	1775	90.9	177	9.1
Internal medicine	45.0 (18.3)	44	3.5	1187	96.5
Family/general practice	38.7 (23.8)	652	20.2	1654	71.7
Others	39.8 (17.8)	149	24.0	473	76.0
Total	36.0 (22.8)	2976	32.5	6179	67.5

multivariate analysis that took into account the sampling variability as well as a series of independent variables. Sampling weights were applied to achieve the nationally representative estimates. All data management and analysis were performed with the Statistical Analysis System (SAS Institute, Cary, NC) and Sudaan (Research Triangle Institute, Cary, NC).

RESULTS

There was an average of 1.1 million outpatient visits per year for urticaria in 1990 through 1997 (9.2 million total visits). Women accounted for 69% of patient visits, more than twice as many visits as men (Table I). However, the gender distribution was near equal for patients 18 years and younger. Women accounted for 77% of visits by those older than 18 years of age (Fig 1). A clear majority of patients were white (83%) and non-Hispanic (88%). Blacks and

Asians accounted for 8% and 9% of visits, respectively. More than half of patients were diagnosed with urticaria alone, whereas 34% were associated with 1 comorbid diagnosis and 14% with 2 comorbid diagnoses. More than 75% of the visits for urticaria involved physicians who saw former patients for their complaint. The mean age of all patients seen for urticaria was 36 years, with a standard deviation of 23 years (Table II). Patients younger than 18 years accounted for 33% of all visits.

The age analysis shows a bimodal distribution of visits with the highest frequency (20% of visits) occurring in those patients aged from birth to 9 years. A second peak frequency of urticaria visits was found within the age group 30 to 39 years (16% of visits). The frequency of urticaria visits continuously decreased with each older age group above the 30 to 39 years age group. When the distribution was

Table III. Treatments prescribed for urticaria

	H ₁ antihistaminic agents		Corticosteroid agents		Other urticaria-related medications*	
	Thousands of visits	%	Thousands of visits	%	Thousands of visits	%
Dermatology	1027	52.4	291	14.8	225	11.5
Allergy	627	57.9	63	5.8	209	19.2
Pediatrics	1563	80.1	178	9.1	127	6.5
Family/general practice	1097	47.6	320	13.9	266	11.5
Internal medicine	540	43.9	351	28.5	94	7.7
Others	260	41.8	76	12.2	189	30.3
Total	5114	55.9	1279	14.0	1110	12.1

*See Methods section.

assessed for per capita visits, this bimodal characteristic was preserved. Urticaria remained most likely to occur in patients from birth to 9 years old (5.9 visits/1000 persons/year). However, the second peak frequency was shifted such that patients from 50 to 59 years old were the next most likely to experience urticaria (5.3 visits/1000 persons/year).

The use of H₁ antihistamines, corticosteroids, and other related medications for the treatment of urticaria were compiled. H₁ antihistamines were used in 56% of all urticaria visits, significantly more than any other medication (Table III). A systemic corticosteroid was prescribed in 14% of visits. Other related medications were used in 12% of visits, of which doxepin, epinephrine, ranitidine, albuterol, and nifedipine were among the most common (Table IV). Cimetidine and methotrexate were also mentioned.

To further characterize the treatment of urticaria in the outpatient setting, we analyzed patient populations and treatments by individual specialty. Physicians in the following specialties diagnosed more than 90% of visits for urticaria: dermatology, allergy, pediatrics, internal medicine, and family/general practice (Table V). Of these, family/general practice saw the largest fraction of visits (25%). Dermatology and pediatrics each saw 21% of all visits. Allergy and internal medicine recorded fewer visits (12% and 13% of visits, respectively). However, there are relatively few allergy physicians in the United States; allergists saw 47 patients per physician per year, more than any other specialty (Fig 2). Likewise, there were many more visits per physician to dermatologists than to any general physician (37 visits/physician/year). Of the generalists, pediatricians saw the most visits (8 visits/physician/year), whereas internists saw the fewest (2 visits/physician/year).

There was marked variety of comorbidity among the specialties. At 65% of dermatology and pediatric

Table IV. Other related medications used in the treatment of urticaria

	Literature mentions ¹⁶⁻³⁰	Agents noted to be used
H ₂ antihistamines	Cimetidine	Yes
	Ranitidine	Yes
β Agonists	Epinephrine	Yes
	Terbutaline	No
	Albuterol	Yes
	Ephedrine	No
Tricyclic antidepressants	Doxepin	Yes
Mast cell stabilizers	Cromolyn	No
	Ketotifen	No
	Oxatomide	No
	Doxantrazole	No
Calcium channel blockers	Nifedipine	Yes
Miscellaneous agents	Danazol	No
	Stanozolol	No
	Dapsone	No
	Colchicine	No
	Sulfasalazine	No
	Cyclosporine	No
	Methotrexate	Yes
	Zafirlukast	No

visits there was no comorbid diagnosis, whereas one or two comorbid diagnoses accounted for the majority of visits in each other specialty (54% of visits for allergy to 66% of visits for others unspecified). Likewise, whereas a clear majority of all visits were for former patients, the distribution varied widely among specialties. More than half (56%) of allergy visits were for new patients compared with only 9% of visits to pediatrics.

Excluding pediatrics, the age populations between the specialties were similar, with mean ages ranging

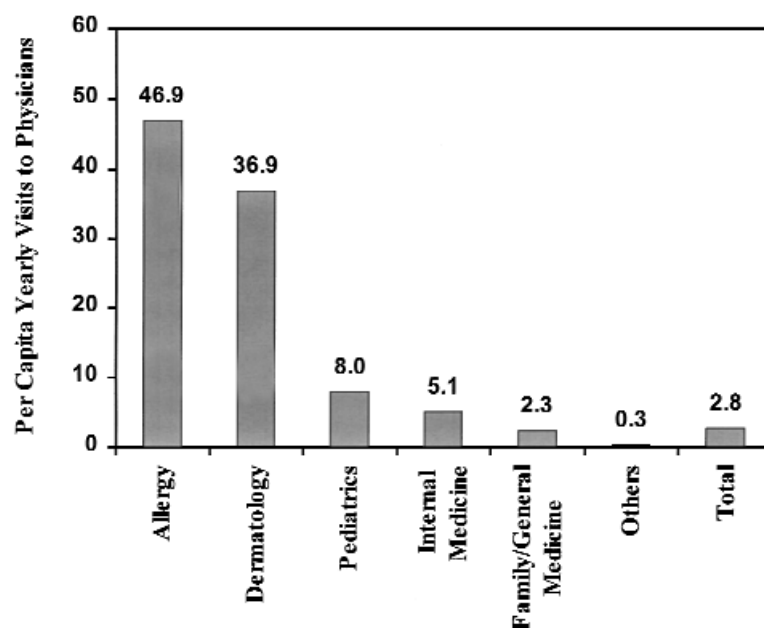


Fig 2. Estimated physician per capita yearly visits for urticaria by office-based physician specialties.

Table V. Visits for urticaria by specialty

	Frequency		No. of physicians	Yearly visits per physician
	Thousands of visits	%		
Dermatology	1960	21.4	6,645	36.9
Allergy	1084	11.8	2,886	46.9
Pediatrics	1952	21.3	30,618	8.0
Family/general practice	2306	25.2	57,075	5.1
Internal medicine	1230	13.4	67,221	2.3
Others	623	6.8	237,846	0.3
Total	9155	100.0	402,291	2.8

from 35 years for allergy to 45 years for internal medicine. The mean age for patients seen in pediatrics was 8 years. To better compare the pediatric visits with those of the other specialties, we looked at the frequency of patients younger and older than 18 years of age within each specialty. As expected, more than 90% of pediatric visits were younger than 18 years. A clear majority of patients in the other specialties were older than 18 years.

Most specialists prescribed H_1 antihistamines in approximately half of visits, but pediatricians used H_1 antihistamines in 80% of visits. Allergists were the least likely to use a corticosteroid agent (6% of visits), whereas internists were the most likely (29% of visits). Dermatologists used corticosteroid agents in 15% of visits, approximately 2.5 times as often as allergists. Of all the individual specialties studied,

allergists used other related medications most often (19% of visits).

The frequency of each medication used was further analyzed for use in single or combination therapy (Table VI). Excluding pediatrics, monotherapy with H_1 antihistamines was similar between specialties (31%-41% of visits). More than two thirds of pediatric patients received H_1 antihistamine treatment alone. Dermatologists used corticosteroids in single and triple combination therapy more often than allergists. The high use of corticosteroids seen in internal medicine is accounted for as monotherapy. Dermatologists treated urticaria in 96% of visits, more than all other specialties. There were no drug agents prescribed (mentioned) in more than one third of visits to allergists, internists, and family/general practitioners.

Table VI. Comparison of medication treatments for urticaria by specialists (estimates in thousands)

Treatment	All specialties	Dermatology	Allergy	Pediatrics	Internal medicine	Family medicine	Others
H ₁ antihistamines alone	3873 (42.3)	737 (37.6)	443 (40.9)	1359 (69.6)	392 (31.8)	746 (32.4)	195 (31.3)
Corticosteroids alone	723 (7.9)	116 (6.0)	3 (0.3)	76 (3.9)	249 (20.3)	236 (10.2)	41 (6.7)
Other urticarial medications alone	227 (2.5)	22 (1.1)	7 (6.2)	25 (1.3)	0 (0)	0 (0)	112 (18.0)
H ₁ antihistamines and other urticarial medications	737 (8.1)	115 (5.9)	129 (11.9)	102 (5.2)	71 (5.7)	266 (11.5)	54 (8.6)
Corticosteroids and other urticarial medications	52 (0.6)	0 (0)	5 (0.5)	0 (0)	24 (1.9)	0 (0)	23 (3.7)
H ₁ antihistamines and corticosteroids	410 (4.5)	87 (4.4)	48 (4.5)	101 (5.2)	78 (6.3)	84 (3.7)	12 (1.9)
H ₁ antihistamines, corticosteroids and other urticarial medications	94 (1.0)	87 (4.5)	7 (0.6)	0 (0)	0 (0)	0 (0)	0 (0)
No listed treatment	3040 (33.2)	795 (40.5)	381 (35.2)	289 (14.7)	417 (33.9)	972 (42.2)	186 (29.8)

Data given in parentheses are percentages.

We also examined the frequency of visits for urticaria that were referred by another physician and the referral disposition of visits for urticaria. Dermatology and allergy recorded a relatively large percentage of visits for urticaria that were referred by other physicians (49% and 25% of visits, respectively), compared with fewer than 10% of visits in other specialties. The disposition of the visits shows that relatively few of any visits for urticaria were referred in any specialty. Of the specific specialties we looked at, family/general practice was the most likely to refer patients for urticaria (6% of visits). Other specialties referred visits for urticaria 10% of the time.

DISCUSSION

In our analysis of urticaria, we have addressed two major issues: demographics and management options used by different physicians. Unfortunately, the ICD-9 codes used within the NAMCS do not allow for differentiation of acute and chronic forms. Therefore our results are based on data that groups all forms of urticaria together.

Our analysis confirmed previous study results that women are more often affected by urticaria than men. In 1965, Green, Koelsche, and Kierland⁶ reported that 126 of 236 patients (53%) with chronic urticaria seen at the Mayo Clinic in 1957 and 1958 were female. Our results most closely agreed with results by Nizami and Baboo⁸ and Margolis and Nisi.⁷ Nizami and Baboo⁸ found that 142 of 215 continuous patients (66%) with urticaria seen in their allergy clinics over a 2-year period were female. Most

recently, Margolis and Nisi⁷ determined that 76% of patients diagnosed with urticaria in their family-based residency program were female. Nationwide, we found that in the outpatient office-based setting, female patients accounted for 69% of visits for urticaria.

We do, however, recognize that women are more likely to seek medical help for illnesses than men, which may account for our observations. Two European studies randomly sampled male and female patients, thereby determining a true prevalence of urticaria in women. In 1972, Hellgren⁹ reported that of 36,475 patients examined in Sweden, 0.14% of female patients were found to have urticaria compared with 0.11% of male patients. Bakke, Gulsvik, and Eide⁴ randomly surveyed and examined 4992 subjects in southwest Norway and determined an 11% lifetime prevalence of urticaria in women compared with 7% in men.

Chronic urticaria is often described as being more common in middle-aged women, whereas acute urticaria is more common in children and young adults of either sex. Previous data do not completely support this statement. The retrospective analysis by Margolis and Nisi⁷ found a preponderance of chronic urticaria in women 24 to 44 years old. They also found that 36 of 52 patients diagnosed with acute urticaria were female. A retrospective study in Brussels, Belgium of 676 patients admitted for acute urticaria in an emergency department found a bimodal distribution in very young children and in adults 20 to 30 years of age. The mean age was 28 years. However, female patients were more affected

than men. A 1969 study of 554 consecutive patients with urticaria, who were attending hospitals in the Cambridge region, found the highest incidence in patients 20 to 40 years of age (12% per year).³ Hellgren⁹ determined a median age of female and male patients found with urticaria to be 35 years and 44 years, respectively. Half (107/215) of the patients reported by Nizami and Baboo⁸ were between 20 and 39 years of age. Therefore previous data actually show that visits for acute and chronic urticaria are more common in women from 20 to 40 years of age. Men are also affected more commonly around the age of 40 years. There is also an associated peak distribution of acute urticaria in young children.

Because we could not differentiate visits for acute and chronic urticaria, at best our data on the age distribution of urticaria visits confirmed these previous observations. We found a curious bimodal distribution of office-based visits for urticaria with peak use in young children and in adults aged 30 to 39 years. On a per capita basis, urticaria is more likely in childhood and in those aged 50 to 59 years than those aged 20 to 40 years. Although women are more affected by urticaria, there is an equal gender distribution for those 18 years of age and younger.

We confirm that H₁ antihistamines are the mainstays in the treatment of urticaria.^{12,14,15} Our analysis indeed showed that H₁ antihistamines were mentioned as urticaria treatments more than any other group of medications. Nationwide, we were surprised to find that H₁ antihistamines were used in only 56% of visits. Margolis and Nisi⁷ found that antihistamines were used in 89% of visits in their family medicine program. By contrast, we found that only 48% of family physician visits had H₁ antihistamine drug mentions. We did find that pediatricians used H₁ antihistamines in 80% of visits, more than any other specialist.

It is well known that systemic corticosteroid agents provide symptomatic relief of urticaria. Their use has been described in severe cases of acute urticaria or to temporarily break the cycle of a resistant chronic urticaria. They have also been described as the treatment choice for delayed pressure urticaria. However, systemic corticosteroid agents for chronic urticaria may not be ideal agents. Whenever used, they should be combined with an antihistamine agent.^{12,14,15}

We found that systemic corticosteroids were used in only 14% of all visits for urticaria, reflecting physicians' understanding of their secondary function in the treatment of urticaria. Margolis and Nisi⁷ reported that almost 11% of their family practice patients were treated with systemic corticosteroids. Our results were similar for corticosteroid use in family

medicine (14% of visits). Allergists used corticosteroids in far fewer visits than other specialists (6%). Nizami and Baboo⁸ published the only report characterizing the use of corticosteroids in urticaria by allergists in 1974. In their study, only 5 of 215 patients over a 2-year period received short courses of corticosteroids for severe episodes of urticaria. Because their results did not include the number of visits by each patient, a direct comparison with our analysis is not possible. However, the fraction of their patients treated with corticosteroids was very small (about 2%), which agrees with our data.

We found the highest use of systemic corticosteroids occurred in internal medicine (29% of visits). In most of these visits, the corticosteroids were not used in association with an H₁ antihistamine or other related medication. Although we were not able to determine the severities or types of urticaria seen in patients by internists, we are concerned this represents excessive use. Our study shows that on a per physician basis, internists see few visits for urticaria per year. Previous studies have shown that internists have less experience treating cutaneous diseases than other specialties, and this difference affects their ability to care for patients with skin disease.³⁵⁻⁴⁰ However, experience alone cannot account for this observation. Family physicians used corticosteroids with similar frequency to dermatologists, yet saw the fewest per capita visits for urticaria of all the individual specialties we examined.

An alternative explanation for corticosteroid-prescribing behavior differences is that physician specialties see different forms of urticaria. Therefore those specialties that treat the greatest number of patients with acute urticaria use the systemic corticosteroids the most, whereas the converse is also true. Allergists would therefore be hypothesized to see patients with the smallest proportion of chronic to acute urticaria visits, whereas internists see the highest proportion. This explanation should be tempered with the observation, as noted above, that family physicians used systemic corticosteroids with a frequency similar to dermatologists. Allergists, dermatologists, and family physicians treat patients of all ages, whereas pediatricians treat exclusively young patients and internists treat exclusively adult patients. These differential patient mixes may contribute to our observations.

The current NAMCS provides an excellent description of outpatient care in the United States. However, there are important limitations to our study. The sampling procedure provides for good nationwide estimates, but sampling estimates are subject to sampling error. In addition to not being able to differentiate between acute and chronic

forms of urticaria, we were not able to classify the severity of disease manifested by patients. It is possible that different specialties saw different patient populations with respect to the type and severity of disease. This could explain some of the differences in treatment options used by different physicians.

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