

Demographics and Long-Term Follow-Up in a Veterans Affairs Allergy/Immunology Center: A 10-Year Analysis

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ABSTRACT

Between 1985 and 1992, patients were evaluated as new outpatient consultations in the Allergy/Immunology Center at the Veterans Affairs Greater Los Angeles Health Care System (VAGLAHS). Data collected included age, gender, ethnicity, and diagnosis. After 10 years, patient follow-up status was determined and classified into five categories: gender, ethnic distribution, age distribution, disorders seen, and follow-up pattern. A total of 1116 patients were evaluated. The gender of our population was 7.8% women and 92.2% men. The ethnic distribution was 59.5% white, 32.2% black, 6.5% Hispanic, and 1.9% other. Neither age nor ethnic distribution was significantly different from the general veterans affairs population. Age of patients ranged from 20 to 90 years old. The largest peak for age at initial presentation was 60 years. The three most common disorders seen in the clinic were rhinitis (36.6%),

asthma (24.5%), and sinusitis (12.3%). The 10-year follow-up pattern of patients revealed that 6% were seen in the past year, 6.2% of patients were seen longer than 1 year ago but within the 5 past years, 29% of patients who were still seen at VAGLAHS but were no longer patients of the allergy clinic, 32.7% of patients who were no longer seen at VAGLAHS, and 26.2% died. Women and patients who were 50–60 years old were more likely to follow-up. There was no difference in follow-up visits among ethnic groups. (Allergy and Asthma Proc 26:310–315, 2005)

Demographic data on allergic disorders in the general population have been well documented by numerous studies and surveys, including the International Study of Asthma and Allergies in Childhood,¹ European Community Respiratory Health Survey,² and the third National Health and Nutritional Examination Survey, 1988–1994.³ However, demographic data on allergic disorders in the veteran population are lacking. The Veterans Affairs (VA) is the largest unified health care system in the United States. The purpose of this study was to provide baseline Allergy and Immunology data for the VA to serve as a substrate for future studies.

The VA population is composed of individuals who have served in the uniformed forces of the United States. The definition of a veteran is an individual who has had service in the military and has been discharged or released from active service except by dishonorable conditions (Enrollment in VA's Health Care System July 25, 2003 [cited 2003 Oct 1]. Available at: URL <http://www.va.gov/elig/Eligibility.htm>) or a person who fall into 1 of 30 additional beneficiary categories listed by the VA. The Veterans'

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Health Care Eligibility Reform Act of 1996, passed by Congress in October 1996, regulates VA health benefits.⁴ This public law enabled the creation of a Medical Benefits Package, which provides both preventive and primary care in outpatient and inpatient settings.

The Computerized Patient Record System is an electronic medical records system that facilitates the care of VA patients. This Veterans Health Information System integrates multiple facets of medical care, including progress notes, medications, orders, laboratory data, and diagnostic procedures. With the aid of this computerized database, an analysis of the long-term follow-up patterns referred to an allergy/immunology center (AIC) was possible.

METHODS

Location

This data analysis was conducted at the Veterans Administration Greater Los Angeles Health care System (VAGLAHS). The system is composed of one major medical hospital, four regional ambulatory care clinics, two nursing home units, and seven community-based outpatient clinics. All allergy/immunology consultations are centralized to the VA medical hospital located in West Los Angeles. Unique to VAGLAHS, compared with other VA institutions, is that there is an accredited allergy and immunology training program based out of a VA institution, which consists of a full-time director, volunteer clinical faculty, two full-time clinical fellows, research fellow, and ancillary staff.

Patient Enrollment

From August 1, 1985 to December 31, 1992, 1116 VA patients referred to our AIC were entered into a database. Demographic information compiled included name, gender, ethnicity, identification number, date of birth, date first seen in clinic, and diagnosis. Diagnosis was made after a fellow or resident evaluated a patient, performed necessary diagnostic testing, and presented the case to an attending physician. Additionally, from this information, patient's age was calculated and grouped by decade.

Patients were only evaluated by our specialty clinic after referral by their primary care provider or other specialty clinic. The most common reasons for consultation included evaluation for proper diagnosis, need for skin testing, difficult to manage disease, need for nonformulary medication, and to determine the role of immunotherapy.

Study Design

After initial consultation, AIC patient information was entered into the database as described previously. Comparative data on the general VA population during our study period was unavailable; therefore, patient data from enrollment at the VAGLAHS from October 1998 to July 2003 were used instead. In comparing the demographic data from the two groups, an assumption was made that the

population data of the general VA population currently are similar to the population in our study period of August 1985 to December 1992.

Using the CPRS system, follow-up status was determined and divided into five categories: category 1, active—includes patients seen in our AIC within the past year; category 2, recent—includes patients seen in our AIC longer than 1 year ago but within the past 5 years; category 3, nonallergy—includes patients still receiving care at the VAGLAHS but not in our AIC; category 4, non-VA—includes patients who do not have any progress reports or medications listed in the database; and category 5, died—includes patients who died since evaluation.

After the categorization of each patient, analysis of gender, ethnicity, age, and diagnosis with follow-up pattern was made. The purpose was to identify possible trends and to evaluate factors that may affect follow-up. One important outcome evaluated was follow-up with respect to diagnosis. In this analysis, patients actively or recently followed (categories 1 and 2) in our AIC were grouped (group 1) and compared with those patients not followed (categories 3 and 4) in our center (group 2).

For analysis, demographic values represent absolute numbers of patients for that variable. Gender, ethnicity, and age date percentages are calculated based on the total number of patients in our data (1116 patients). For the percentage of each diagnosis per follow-up categories, 1599 patients were used as the reference number, which represents the total number of diagnoses made.

RESULTS

Demographic Data

Between August 1, 1985 and December 31, 1992, 1116 patients were entered into a database as new outpatient consultations in our AIC. Table I summarizes demographic data, which compares AIC patients in our study period with all VAGLAHS patients from October 1, 1998 to July 1, 2003. In our AIC patients, the gender of our population was similar to the general VAGLAHS population. The ethnic distribution also was similar in both groups except for a minor decrease of Hispanic patients followed in our AIC (not significant, $p = 0.242$).

Age distribution based on decade of life was compared and grouped as in Table I. AIC had an increased percentage of patients in their third through fifth and seventh decade of life and a decreased percentage of patients in their sixth, eighth, and ninth decade of life as compared with the overall VAGLAHS population. Table II helps to delineate the age distribution based on decade with respect to each category. Additionally, the exact dates of initial follow-up and date of birth were available for our patients. Age at time of initial evaluation was calculated and grouped into 2 years starting at age 20 years and continuing until age 90 years. Figure 1 is a compilation of this data analysis. The largest peak of age at presentation is 60 years.

TABLE I

Demographics of VAGLHS Patients (October 1998 to July 2003) to Allergy Clinic Patients
(August 1985 to December 1992)

Demographic	Allergy Total		VAGLAHS Total	
	Number	Percent	Number	Percent
Female	87	7.8	13,479	8.9
Male	1029	92.2	137,267	91.1
Total number	1116		150,746	
Black	359	32.2	13,971	30.8
White	664	59.5	26,205	57.8
Hispanic	72	8.5	4482	9.9
Other	21	1.9	660	1.5
Total number	1116		45,318	
Pts in the 3rd and 4th decade	247	22.1	17,174	11.4
Pts in the 5th decade	224	20.1	23,333	15.5
Pts in the 6th decade	194	17.4	38,589	24.3
Pts in the 7th decade	315	28.2	25,401	16.9
Pts in the 8th and 9th decade	136	12.2	47,784	31.8
Total number	1116		150,281	

Pts = patients.

TABLE II

Comparison Table of Demographics Data with Long-Term Follow-Up Outcome

	Total		Active (C1)		Recent (C2)		Non-A/I (C3)		Non-VA (C4)		Died (C5)	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Demographics												
Total number of patients	1116		67	6.0	69	6.2	323	28.9	365	32.7	292	26.2
Female	87	7.8	8	9.2	6	6.9	32	36.8	30	34.5	11	12.6
Male	1029	92.2	59	5.7	63	6.12	291	28.2	335	32.6	281	27.3
Black	359	32.2	20	5.6	24	6.7	124	34.5	107	29.8	84	23.4
White	664	59.5	41	6.2	40	6.0	171	25.7	224	33.7	188	28.3
Hispanic	72	6.5	4	5.5	5	6.9	23	31.9	26	36.1	14	19.4
Other	21	1.9	2	9.5	0	0	5	23.8	8	38.0	6	28.6
Pts in the 3rd decade	78	7.0	4	5.1	4	5.1	18	23.1	46	59.0	6	7.7
Pts in the 4th decade	169	15.1	7	4.1	11	6.5	52	30.8	78	46.1	21	12.4
Pts in the 5th decade	224	20.1	18	8.0	12	5.4	81	36.2	80	35.7	33	14.7
Pts in the 6th decade	194	17.4	17	8.8	16	8.2	57	29.4	54	27.8	50	25.8
Pts in the 7th decade	315	28.2	18	5.7	20	6.3	80	25.4	86	27.3	111	35.2
Pts in the 8th decade	125	11.2	3	2.4	6	4.8	35	28.0	18	14.4	63	50.4
Pts in the 9th decade	11	1.0	0	0	0	0	0	0	3	27.3	8	72.7
Diagnosis												
Total number of diagnosis	1599		105	%	101	%	456	%	518	%	419	%
Rhinitis	586	36.6	41	7.0	38	6.5	183	31.2	191	32.6	133	22.7
Asthma	392	24.5	36	9.2	32	8.2	93	23.7	114	29.1	117	29.8
Sinusitis/nasal polyps	196	12.3	16	8.2	11	5.6	60	30.6	60	30.6	49	25.0
Urticaria/angioedema	140	8.8	1	0.7	3	2.1	37	26.4	59	42.1	40	28.6
Drug sensitivity	83	5.2	4	4.8	2	2.4	22	26.5	23	27.7	32	38.5
Food sensitivity	70	4.4	2	2.9	5	7.1	25	35.7	27	38.6	11	15.7
Ocular allergy	68	4.3	2	2.9	5	7.3	20	29.4	23	33.8	18	26.5
Other	64	4.0	3	4.7	5	7.8	16	25.0	21	32.8	19	29.7

C = Category; Dx = Diagnosis; Pts = patients

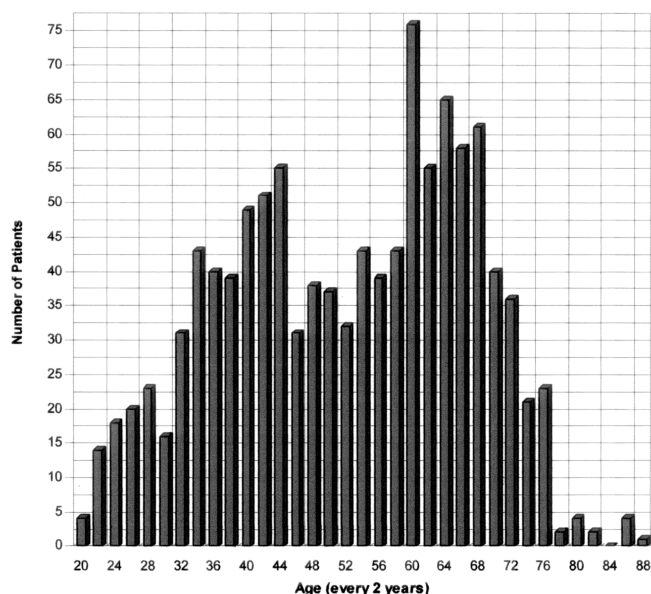


Figure 1. Age at initial consultation.

The last demographic data analyzed were diagnoses. From the 1116 patients referred to our clinic, 1599 diagnoses were made. Table II summarizes the disorders seen in our AIC: rhinitis, asthma, sinusitis, urticaria/angioedema, drug sensitivity, food sensitivity, ocular allergy, and other. Of the 1116 patients evaluated, 32.6% of them had more than one of the foregoing diagnoses.

Follow-Up Data

In May 2003, the outcome of patients seen at our AIC after 10–18 years from initial consultation was determined. In total, the 10-year follow-up pattern of patients revealed that 67 patients (6%) were seen in the past year, 69 patients (6.2%) were seen within 5 years but longer than 1 year, 323 patients (29%) were still seen at the VAGLAHS but were no longer patients of our AIC, 365 patients (32.7%) were no longer seen at the VAGLAHS, and 292 patients (26.2%) died.

In addition to identifying each patient into one of five categories, each demographic variable was separated based on category, results of which are compiled in Table II. Women were more likely than men to follow-up in the AIC within the last year—8 women (9.2%) versus 59 men (5%). This difference was no longer apparent when looking at follow-up percentages for men and women that had been seen more than 1 year ago but within the last 5 years. There were no significant differences in follow-up patterns between ethnic groups. Patients in their fifth and sixth decade of life were more likely to be seen for follow-up within the last year.

For the analysis of diagnosis and long-term follow-up, the patients were separated in two groups and the results are presented in Fig. 2. Comparing the total number of a certain diagnosis to their specific group derives percentages represented in the figure. For example, of the patients that had the diagnosis of food sensitivity on initial evaluation from Au-

gust 1985 to December 1992, 11.9% had seen us within the past 5 years, while 88.1% were no longer followed in our AIC. The three most common diagnoses to have follow-up within the past 5 years were asthma, 17.4%; sinusitis, 13.8%; and rhinitis, 13.5%.

DISCUSSION

The purpose of this article was twofold, first to analyze the demographics of a specialty AIC and to compare this with the VA population at large and, second, to determine the long-term follow-up patterns of these patients. For an allergist in private practice, this article provides demographic data and follow-up patterns of a more elderly patient population.

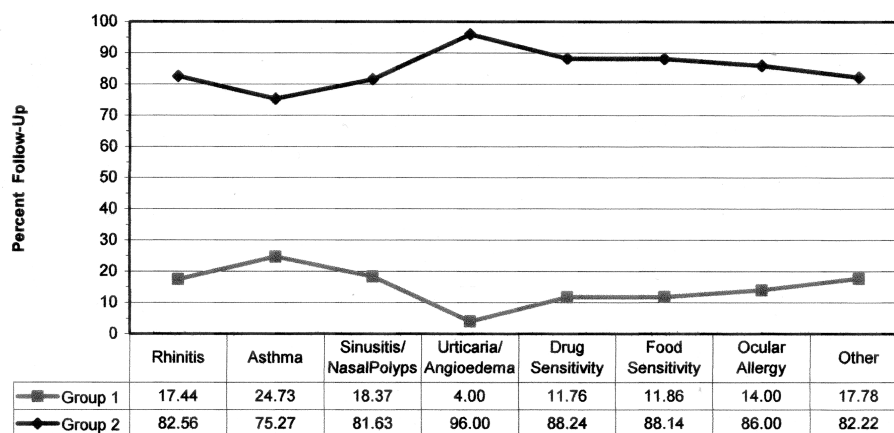
Data for the AIC were collected from August 1985 to December 1992 and then were compared with the general VA population from the time period of October 1998 to July 2003. Large medical centers can have a shift in their demographics over a 10-year period but the demographics of the VA population are relatively consistent and so the comparison is valid.

When comparing the AIC patients with the general VAGLAHS patients, no major differences existed between the genders of the two populations. Our low percentage of female patients is unique to that of a private allergy practice. It is difficult to make any generalizations about the female patient population at the VA because of the low numbers of female patients seen.

In regards to the variables of ethnicity and age, the makeup of the AIC patients and VA population is quite similar. An interesting finding is that white and black patients dominate the VA population, with other minorities making up only a small sampling. This is consistent with the demographics of the active military.⁵ The age differences noted between the study group and the general population confirm the concept of younger patients having allergic disorders.⁵ In the age distribution data, 42% of the patients referred to the AIC were <50 years old, whereas only 27% of the general VAGLAHS patients are in that age group.

Figure 1 compiles the population age of patients in our clinic. The x-axis lists the age of patients in groups of 2 years and the y-axis lists total number of patients. In analyzing the data, the largest peak for age at initial consultation is 60 years. This is different than the initial age at presentation for a private allergist. Many private allergists see a large percentage of children in their practice and fewer patients > 60 years old. One explanation for this increased age at initial presentation is that this is not the patient's first visit to an allergist. Many of our patients have had careers outside of the military where they have private insurance that allows them to see physicians in the private sector. Once these patients reach retirement age they switch their care to the VA because of loss of private insurance plans. This analysis provides data for an elderly population, a rapidly expanding and important segment of our society.

In total, 12.2% of patients visited our clinic in the past 5 years (C1 and C2). This low percentage is somewhat surpris-



Notes:

Group 1: Represents percentage of patients actively (category 1) or recently (category 2) followed in our Allergy/Immunology Clinic
 Group 2: Represents percentage of patients no longer (category 3 and 4) followed in our Allergy/Immunology Clinic

Figure 2. Comparison of follow-up between group 1 and group 2 patients and diagnosis.

ing; however, in the mid-1990s, the focus of the specialty clinic at the VAGLAHS and of many Health Maintenance Organizations changed. To better manage resources, VA care shifted from specialist to primary care. Specialty clinics were to diagnose and provide treatment options and then shift patients back to their primary care provider for management. The patients that remained in specialty clinics were those with complex diseases and those that required more subspecialty care. Once medications and treatment options are outlined by the AIC, the patient's primary care physicians continue the treatment protocol that the AIC has outlined. The goal of the AIC is to optimize patient medications and other therapies for better control of their disease.

The final two follow-up classifications, were patients who no longer followed up in our AIC but are still patients at the VAGLAHS (C3) and patients who could not be located within the VAGLAHS database (C4). The percentage of those two groups was 28.9 and 32.7%, respectively. That at least one-third of the patients are actively seen in the VA is encouraging and helps to refute the misconception that the VA is a "last resort" for patients. It also is interesting to note that most patients who left the VAGLAHS were younger patients. The reason patients may no longer follow-up at the VAGLAHS is that they have transferred their care to other VA institutions, received private insurance, or have chosen other options to obtain medical care, including Medicare or state-sponsored health insurance.

The demographic data and long-term follow-up outcome were compared. For gender, we find a decreased percentage of female patients who died, which might be a reflection of the increased life expectancy of the female population. In addition, female patients were more likely to follow-up in the last year than their male counterparts. Although no published data could be identified that documented the

increased tendency for female patients to follow-up or seek medical care, this trend is consistent with the authors' beliefs. This reason for this disparity may help identify basic strategies for improving follow-up for patients.

For ethnicity, no identifiable trends or differences were observed. Most patients that continue to follow-up in the VA were in their fifth or sixth decade of life on initial presentation, which may represent patients who were retiring and in need of stable and reliable medical care. Also, patients over their sixth decade of life may be less likely to follow-up because of their increased number and severity of medical problems. Their other medical problems possibly are becoming more time-consuming and life threatening. This is supported by the fact that most patients that died were in their seventh and eighth decade of life.

The diagnoses including rhinitis, asthma, sinusitis/nasal polyps, and other were higher than the reference number of 12.2% determined by the percentage of patients that continue to follow-up in our AIC. Only urticaria/angioedema patients were lower than the reference number, confirming that patients with this condition can be difficult to manage. The higher rates of follow-up of the three primary disorders seen in AIC patients may be accounted for by immunotherapy and the chronicity of these diseases.

CONCLUSIONS

In this study, the demographics data of an adult AIC were compared with the general VA population. In addition, long-term follow-up over a 10- to 18-year period was analyzed. Our results show that the demographics of our AIC patients compares similarly with the general VAGLAHS patients with the exception of the younger patient population in our clinic (42% of patients

were <50 years old in our AIC compared with 27% in the general VA population). For long-term follow-up patterns, our data indicate that only 12.2% of our AIC patients continued to receive care in our subspecialty center. Women were more likely than men to be seen in the AIC within the last year. Ethnicity did not play a role in follow-up patterns. Comparison of follow-up patterns and demographics reveals that rhinitis, asthma, and sinusitis/nasal polyp patients were more likely to be followed as compared with urticaria/angioedema patients. This demographic analysis and follow-up study of a more elderly VA allergy/immunology population provides a database for future studies and may lead to strategies to improve the quality of care for our elderly atopic patients.

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