A Description Of The Content Of Army Family Practice

B. Wayne Blount, MD, MPH, Gary Hart, PhD, and Jenifer L. Ehreth, PhD

Abstract: ***Background:*** **For decisions about residency curricula and downsizing the US Army medical corps, decision makers must know the practice content of the various specialties. Little is known about the content of Army family practice. The purpose of our study was to describe the content of Army family practice.**

Methods: **We analyzed a random sample of 28,849 family practice encounters from the US Army Ambulatory Care Data Base Study. Variables included patient demographics, diagnoses, visit duration, procedures, and medical facility. Patient age and visit duration were compared using analysis of variance; facility profiles were compared by age category and sex of patients, family member position, and procedure frequency using chi-square analysis. Diagnostic content of the facilities was compared by both chi-square and Kendall's tau B tests.**

Results: **The typical patient was a 26-year-old woman. The 25 most frequent diagnoses accounted for three-fourths of all encounters, with variation by patient age. The majority of visits did not include a procedure, but procedure frequency varied by patient age and diagnostic certainty. Mean visit duration was 16.4 minutes and varied by age. There were differences among the sites for all variables.**

Conclusions: **Army family physicians see patients of all ages, of whom more are the family members of soldiers than the soldiers themselves; they frequently do procedures and are usually certain of their diagnoses, which include a broad spectrum of illnesses. Army family physicians are flexible, adapt to local patient and environmental needs, and are uniquely qualified to form the basis of Army medicine. (J Am Board Fam Pract 1993; 6:143-52.)**

The US Army Medical Department (AMEDD) is one of the world's largest providers of medical care.[1] Even though family practice is the largest physician specialty in the AMEDD, little is known about the care provided by Army family physicians. Although information is available on the content of practice for nonfederal family practice,[2-9] there are only four studies addressing the content of medical practice in the military (Table 1).

Hollison and colleagues[10] studied Army family practice but limited their study to only one hospital and only 31 physicians, a majority of whom were residents. Their findings, published in 1978, represented only a 75 percent physician response. Suchomski[11] studied Air Force family practice, but only the encounters of 1 physician were reported; there was no statistical analysis, and the findings cannot be generalized to the Army. Johnson, et al.[12] described Army internist practices but studied only 2 staff internists and 36 residents from two facilities for 7 months. Their data are not generalizable to family practice. Finally, Hudak[13] described Army primary care but did not note the specialties included and used only 4 days of encounters.

The purposes of this study were to describe patient and physician demographics, diagnostic content, and procedural content of Army family practice; to assess the variation of Army family practice by geographic site; and to avoid the limitations of the four studies described above. This last purpose was accomplished by collecting data from a representative sample of Army family practices using different sites within the Army, including a larger number of physicians and few residents and collecting data year round. The overall aim was to describe what Army family physicians see and do, not what illnesses the patients have.

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From the Department of Family Practice, Eisenhower Army Medical Center, Ft. Gordon, GA (BWB), the Department of Family Medicine, University of Washington School of Medicine (GH), and the Department of Health Services, School of Public Health (JLE), University of Washington, Seattle. Address reprint requests to B. Wayne Blount, MD, MPH, 2713 Boar's Head Road, Martinez, GA 30907.

Table 1. Military Studies.*

Author	Location	Study Year(s)	Study Period	Specialty	Physician Number	Random Sample	Diagnoses Number	Encounters Number	Coding System
Hollison, et al.[10]	USA, WA	1975–76	16 mo	FP	31	No	> 1	48,026	ICHPPC
Suchomski[11]	USAF, ND	1978–81	30 mo	FP	1	No	NA	3,703 diagnoses	ICHPPC
Johnson, et al.[12]	USA, TX	1983–84	Variable 2 wk, 3 mo	Internists	38	No	Primary	1344	ICD-8-CM
Hudak[13]	USA, VA	1987	4 days	NA	NA	No	> 1	993	NA

*USA = United States Army, USAF = United States Air force, FP = Family Practice, ICHPPC = International Classification of Health Problems in Primary Care, ICD-8-CM = *International Classification of Diseases*, 8th edition, *Clinical Modification*, NA = not available.

Methods

Data Collection

Family practice content data were obtained from the Ambulatory Care Data Base Study (ACDBS) of the US Army Health Services Command. The ACDBS was a sequential collection taken during 21 months from all specialties in a purposive sampling of Army medical facilities. Army medical facilities are classified into one of four classes based on the size of the facility, size of the patient population, patient demographics, post mission, and physician mix. The sample facilities were chosen by Health Services Command to obtain a facility that was representative of each class. All physicians at these facilities seeing ambulatory patients were required to participate and to collect data on all patient encounters. The methods used in the ACDBS have been previously described.[14]

The data for this study came from 28,849 encounters in a computer-generated random sample selected from the 259,637 total family practice encounters included in the ACDBS. All sampled encounters came from four medical facilities: Fort Bragg, NC; Fort Campbell, KY; Fort Polk, LA; and Redstone Arsenal, AL. Variables provided in the sample were patient age and sex, biologic position of the patient in the family, duration of physician-patient interaction, primary diagnosis, facility site, whether the diagnosis was firm or uncertain, and whether a procedure was done during the encounter.

Procedures in the ACDBS were coded according to the system described in the *Physicians' Current Procedural Terminology*, 4th edition (CPT-4).[15] In the ACDBS, the level of service and the visit itself were not recorded as separate procedures.

Diagnoses were recoded by computer from the *International Classification of Diseases*, 9th edition, *Clinical Modification* (ICD-9-CM) system[16] to the system of diagnosis clusters. These clusters facilitate data analysis and allow better comparisons between studies by sorting out homogeneous groups of diagnoses.[6] Using diagnosis clusters reduces the large number of ICD-9-CM codes to a manageable number, "reduces the confounding effect of the idiosyncratic coding patterns of individual health care providers . . . ," and can reduce many sources of variation in recording.[6] The development and use of diagnosis clusters have been well described previously by Rosenblatt, et al.[6]

Family member positions were denoted by prefixes to patient social security numbers, but these prefixes did not denote retiree or active duty status. With less than 1 percent of all soldiers aged 50 years or older, patients with the prefix for sponsors (soldier or retiree) who were younger than 50 years of age were assumed to be on active duty, and those who were 50 years and older were assumed to be retired. This assumption overestimates soldiers, because many retire before their 50th birthday.

Intra-Army locational differences were analyzed among the four facilities by analysis of variance (ANOVA) for continuous data and chi-square analysis for categorical data. Diagnostic frequency among sites was compared for each separate diagnosis cluster by chi-square analysis and then by Kendall's tau B for a correlation among diagnosis cluster ranks. Unless otherwise stated, all analyses utilized data from all four sites.

Results

Family Practice Patients

The distribution by age and sex of patient encounters is shown in Table 2. There was no statistical

Table 2. Distribution of Patient Encounters by Age and Sex.

Characteristic	Percentage of All Encounters	Number of Cases
Age (years)		
< 17	33.5	9,678
17–44	47.4	13,688
45–64	15.1	4,357
65+	3.9	1,126
Mean age (years)	25.91	28,849
Sex		
Male	34.2	9,866
Female	65.8	18,983

difference when these values were compared between the three sites without residents and the one site with residents.

Content of Army Family Practice

Overall Description

The 25 most frequent diagnosis clusters are listed in Table 3. The most frequent cluster was the general medical examination, followed by pregnancy care, two otolaryngology clusters, and hypertension. These first five clusters accounted for one-half of all patient encounters. Two-thirds of all encounters were within the 17 most frequent clusters.

Because of possible differences in practice content in residencies, the residency site was excluded, and the 25 most frequent clusters were recalculated for postresidency family physicians. The top 25 diagnosis clusters were the same, but the order differed slightly. Kendall's coefficient of concordance for these two rankings was 0.9885.

The 10 most frequent diagnosis clusters in each of four age categories were determined (Table 4). There was expected variation among the groups. Otitis media was seen predominantly in the pediatric age group; pregnancy and reproductive and genital problems in young adults; and chronic disorders associated with lifestyle in the older adult groups. The general medical examination and acute upper respiratory tract infection, however, were within the top 10 clusters for all ages.

In the ACDBS, diagnoses were recorded either as being reasonably certain (firm) or as uncertain. Army family physicians were reasonably certain of 97.2 percent of their diagnoses.

Table 5 lists those diagnosis clusters for which physicians reported the most difficulty making reasonably certain diagnoses. Physicians were uncertain 60 percent of the time with a rheumatoid

Table 3. Top 25 Diagnosis Clusters Recorded for Family Physicians (FPs) and Residents.

Diagnosis Cluster	Percentage of Total Encounters: All FPs (Rank)	Percentage of Total Encounters: No Residents (Rank)	Mean Visit Duration (min)
General medical examination	22.8 (1)	23.2 (1)	16.6
Pregnancy	10.1 (2)	9.5 (2)	17.8
Acute upper respiratory tract infection	7.8 (3)	8.0 (3)	13.8
Otitis media	5.5 (4)	5.6 (4)	15.2
Hypertension	3.7 (5)	3.7 (5)	16.1
Acute lower respiratory tract infection	1.9 (6)	1.9 (6)	16.6
Nonfungal infection of skin/subcutaneous tissue	1.6 (7)	1.7 (7)	15.8
Low back pain and syndromes	1.6 (8)	1.7 (8)	16.0
Vaginitis, vulvitis, and cervicitis	1.6 (9)	1.6 (9)	16.6
Fibrositis, myalgia, and arthralgia	1.4 (10)	1.4 (10)	16.5
Abdominal pain	1.3 (11)	1.3 (11)	17.5
Headaches	1.2 (12)	1.2 (14)	16.3
Lacerations, contusions, and abrasions	1.2 (13)	1.2 (13)	15.4
Dermatitis and eczema	1.2 (14)	1.2 (16)	15.5
Diabetes mellitus	1.1 (15)	1.1 (20)	17.6
Asthma	1.1 (16)	1.1 (12)	17.9
Viral warts	1.1 (17)	1.1 (15)	15.0
Depression, anxiety, neuroses	1.1 (18)	1.1 (17)	20.2
Contraception	1.1 (19)	1.1 (19)	17.8
Urinary tract infection	1.1 (20)	1.1 (18)	15.4
Diarrhea and gastroenteritis	1.0 (21)	1.0 (21)	16.2
Menstrual disorders	1.0 (22)	1.0 (23)	18.3
Sinusitis: acute and chronic	1.0 (23)	1.0 (22)	17.3
Acute sprains and strains	0.9 (24)	0.9 (24)	15.1
Conjunctivitis and keratitis	0.8 (25)	0.8 (25)	15.2

Table 4. Percentage Distribution of Visits by Patient Age and Diagnostic Clusters.

Age	Rank	Percent	Diagnosis Cluster
< 17 years	1	28.4	General medical examination
	2	15.5	Acute upper respiratory tract infection
	3	14.8	Otitis media
	4	2.5	Acute lower respiratory tract infection
	5	2.2	Lacerations, contusions, and abrasions
	6	2.2	Nonfungal infections of skin and subcutaneous tissue
	7	2.0	Diarrhea, gastroenteritis
	8	1.8	Conjunctivitis and keratitis
	9	1.7	Dermatitis and eczema
	10	1.5	Asthma
17–44 years	1	21.5	General medical examination
	2	21.0	Pregnancy care and abortion
	3	4.0	Acute upper respiratory tract infection
	4	2.8	Vaginitis, vulvitis, and cervicitis
	5	2.2	Contraception
	6	2.2	Low back pain and syndromes
	7	2.1	Hypertension
	8	1.8	Fibrositis, myalgia, and arthralgia
	9	1.8	Headaches
	10	1.7	Menstrual disorders
45–64 years	1	16.4	General medical examination
	2	13.0	Hypertension
	3	3.8	Acute upper respiratory tract infection
	4	3.7	Diabetes mellitus
	5	2.8	Low back pain and syndromes
	6	2.7	Fibrositis, myalgia, and arthralgia
	7	2.2	Emphysema, chronic bronchitis, and COPD*
	8	2.2	Ischemic heart disease
	9	1.9	Degenerative joint disease
	10	1.8	Nonfungal infections of skin and subcutaneous tissue
65+ years	1	17.6	Hypertension
	2	17.0	General medical examination
	3	4.7	Emphysema, chronic bronchitis, and COPD*
	4	3.6	Ischemic heart disease
	5	3.3	Acute upper respiratory tract infection
	6	3.1	Diabetes mellitus
	7	2.9	Degenerative joint disease
	8	2.2	Low back pain and syndromes
	9	2.0	Fibrosis, myalgia, and arthralgia
	10	1.8	Cardiac arrhythmias

*COPD = chronic obstructive pulmonary disease.

diagnosis and uncertain 50 percent of the time with gallbladder problems, neoplasms, and glaucoma. The uncertainty of most diagnoses listed in Table 5 is understandable. Others, such as strabismus, deafness, hematuria, and spine curvatures, are understandable if the uncertainty was with the cause or degree of the problem, rather than the diagnosis itself. Both urinary tract infections and gallbladder problems had a high frequency of uncertainty (25.5 percent and 50 percent, respectively) and constituted relatively large proportions of all uncertain diagnoses (10 percent and 1.5 percent, respectively).

There were more encounters without procedures, 55 percent, than with procedures, 45 percent. When an encounter had an uncertain diagnosis, however, procedure frequency increased significantly ($P < 0.05$) to 49.6 percent of encounters.

Table 6 lists the 20 diagnosis clusters with the highest mean number of procedures per encounter. Visits for pregnancy care and abortion headed the list with more than one procedure of some kind for every visit. Comparing Tables 6 and 3 reveals that family physicians did procedures in

Table 5. Most Difficult Diagnosis Clusters to Diagnose Definitely (> 6 percent of Diagnoses Classified as Uncertain).

Diagnosis Cluster	Percentage of Diagnosis Clusters Reported Uncertain
Rheumatoid disease	60.0
Cholelithiasis and cholecystitis	50.0
Malignant neoplasms	50.0
Glaucoma	50.0
Personality disorders	40.0
Urinary tract infections	25.5
Infectious mononucleosis and viral hepatitis	25.0
Deafness	25.0
Diaphragmatic hernia	22.7
Acquired curvature of the spine	21.4
Renal calculli	20.0
Peptic diseases	19.1
Seizure disorders	17.8
Sexually transmitted diseases	17.4
Congestive heart failure	12.8
Iron and other deficiency anemia	11.8
Thyroid diseases	11.8
Strabismus	11.1
Peripheral neuropathy and neuritis	9.1
Hematuria	8.8
Diabetes mellitus	7.3
Diverticular disease of the colon	6.7
Helminthiasis, scabies, and pediculosis	6.3
Ischemic heart disease	6.1

Table 6. Top 20 Diagnosis Clusters by Mean Number of Procedures Per Encounter.

Rank	Diagnosis Cluster	Mean Number of Procedures
1	Pregnancy Care	1.23
2	Vaginitis, vulvitis, and cervicitis	0.79
3	General medical examination	0.75
4	Contraception	0.73
5	Otitis media	0.72
6	Lacerations, contusions, and abrasions	0.59
7	Sexually transmitted diseases	0.55
8	Diarrhea and gastroenteritis	0.54
9	Acute upper respiratory tract infection	0.54
10	Malignant neoplasm, excluding skin	0.50
11	Medical and surgical aftercare	0.47
12	Nonfungal infection of skin and subcutaneous tissue	0.42
13	Dermatitis and eczema	0.41
14	Acute lower respiratory tract infection	0.39
15	Urinary tract infection	0.37
16	Prostatitis and prostatic hypertrophy	0.36
17	Acne and diseases of the sweat and sebaceous glands	0.35
18	Cataracts and aphakias	0.34
19	Peptic diseases	0.32
20	Abdominal pain	0.31

almost one-half of their patient encounters, and those encounters were in the most frequently seen diagnosis clusters.

Procedures also varied with patient age, with a trend toward fewer procedures as patient age increased (Table 7).

Analysis of visit duration revealed longer visits for older patients, with the two oldest groups receiving 16 percent longer visits than children (Table 7). Women were also seen for 30 seconds longer than men.

Mean visit duration for all encounters was 16.4 minutes. Eighty-three percent of all encounters lasted between 11 and 30 minutes, but in Table 3 the mean visit duration for 24 of the top 25 clusters was more than the 15 minutes usually scheduled for Army family practice appointments.

Intra-Army Site Comparisons

Using analysis of variance for site comparisons, we found significant differences among the sites in patient age, sex, active duty status, frequency of uncertain diagnoses, and procedures and visit duration (Table 8). Age varied by as much as 10 years; percentages of female patients varied by 50 percent, whereas percentages of active duty patients differed by fourfold. Visit duration differed by 6 minutes, and uncertain diagnoses and procedure frequency varied widely.

No site saw a predominantly geriatric population, but retired patients approached 30 percent of the total at sites 1 and 4, which contrasted with site 2, where nearly one-half the patients seen were pediatric.

Table 9 shows patients grouped by their positions within the family. In all sites spouses were seen more often than sponsors, and spouses constituted a large percentage of all patients, even though this amount varied by as much as 18 percent. An even greater difference was noted in the active duty or retiree sponsor patients. Site 2 had only 11 percent of its patients as sponsors, whereas site 4 had 34 percent.

Sites were compared by the percentages of each of the 20 most frequent diagnosis clusters (Table 10). To clarify differences between sites, the respective rankings of all clusters were analyzed using Kendall's tau B. The value for tau was −0.0351, indicating minimal correlation among site rankings.

Discussion

Patients

Those persons in the Army "family" who look to family practice for their medical care are predominantly the family members of the active duty and retiree sponsors rather than the sponsors themselves.

Traditional wisdom holds that Army patients are mostly younger men. The younger age is borne out by the data, although elderly patients are still well represented.

Table 7. Procedures Done and Visit Duration Compared with Patient Age.

Patient Age	Procedure Done (%)*	No Procedure Done (%)*	Mean Time per Encounter (min)†
< 17 years	63.4	36.6	15.2
17–44 years	44.0	56.0	16.8
45–64 years	16.7	83.3	17.4
65+ years	13.2	86.8	17.6

*Differences among age groups are significant at $P < 0.00005$ by chi-square test.

†Differences are significant at $P < 0.05$ by the Student-Newman-Keuls test.

Table 8. Site Comparisons by Patient Characteristics, Frequency of Uncertain Diagnoses, and Procedures and Visit Duration.*

Site	Mean Age† (yr)	Females (%)‡	Active Duty Soldiers (%)§	Uncertain Diagnoses (%)†	Mean Visit Duration (min.)†	Visits with Procedures (%)‖	Total Encounters
1	30.5	72.3	9.6	3.2	20.9	32.1	2,357
2	23.7	66.8	5.1	1.5	17.6	73.4	6,223
3	22.6	71.3	9.5	4.8	14.8	56.5	13,321
4	32.7	52.1	23.1	0.0	16.6	2.4	6,948

*Chi-square and Student-Newman-Keuls tests used as appropriate.
† = Differences significant at $P < 0.05$.
‡ = Differences significant at $P = 0.00001$.
§ = Differences significant at $P = 0.001$.
‖ = Differences significant at $P < 0.00005$.

Traditional thinking on sex is not upheld. Army family physicians see a high proportion of women. This finding could be explained by the soldiers, mostly men, using troop medical clinics for their care. These clinics are not predominantly staffed by family physicians. The families of these same soldiers find their care in nontroop clinics with family physicians.

As shown previously for nonfederal family physicians, Army family physicians "do not become de facto pediatricians or geriatricians."[6] Patients represent a broad spectrum of the population. The most important determinant in the patient profile of a specific family practice is the local demographic composition, not the family physicians.[6] Such patient demographics should influence the diagnostic content of sites.

Practice Content

Visit Duration

The trend in visit duration among age groups is unmistakable. Army family physicians spend 16 percent less time with children than adults. Perhaps the children have fewer or less complex problems, or the physicians are less able to obtain as much data from the patient encounter. That women receive 30 seconds more than men is statistically significant but probably not clinically meaningful.

Given the usual patient schedule of every 15 minutes and a mean visit duration of 16.4 minutes, Army family physicians could be behind schedule after the first patient of the day. The cumulative effect of this physician lateness, summed for all patients, can have implications for patient satisfaction, the number of patients seen, and quality of care.[6] Even when a problem does not require the full 15-minute appointment, the patient might want to use all 15 minutes of the visit. Several studies of Army physician satisfaction have noted a recurring complaint of lack of time for administrative tasks. A logical inference is that family physicians need time devoted to chart recording, either added to the end of each appointment or consolidated at the end of each half-day in clinic.

Diagnoses

The 25 most frequent diagnosis clusters include the common primary care illnesses and account for 74 percent of the patient visits to Army family physicians. The most frequent single cluster, 22.8 percent, is the general medical examination. Regular examinations are a requirement for soldiers and could have contributed to the high frequency. Site 4 has the highest frequency of general examinations and the greatest percentage of active duty soldiers; conversely, site 2 has the lowest percentages in both areas (Tables 9 and 10). Nevertheless, soldiers make up a small

Table 9. Comparison of Sites by Family Members Seen (by Percentage of Total Visits).*

Family Member	Site 1	2	3	4
1st child	14.9	22.1	18.5	12.2
2nd child	8.2	15.8	11.1	11.3
3rd child	3.2	6.2	4.1	4.6
4th child	0.6	1.4	1.0	1.5
5th+ child	0.1	0.7	0.4	0.6
Total children	27.0	46.2	35.1	30.2
Active duty member	19.1	11.1	14.4	34.3
Spouse	53.5	42.5	50.5	35.2
Dependent adult	0.3	0.2	0.1	0.4
Total	99.9	100	100.1	100.1

*Totals do not = 100 percent because of rounding. Differences are significant at $P < 0.00005$ by chi-square test with 21 degrees of freedom.

Table 10. Comparison of Sites by Top 20 Diagnosis Clusters.

Rank	Diagnosis Cluster	Percentage of Cluster at Site 1	2	3	4	*P* Value*
1	General medical examination	19.3	17.7	20.4	33.4	< 0.00001
2	Pregnancy care	16.2	7.4	15.4	0.1	< 0.00001
3	Acute upper respiratory tract infection	5.0	9.6	6.9	8.9	< 0.00001
4	Otitis media	4.0	6.1	6.7	3.1	< 0.00001
5	Hypertension	3.6	2.9	4.1	3.6	< 0.002
6	Acute lower respiratory tract infection	1.2	2.6	1.7	1.8	< 0.00001
7	Nonfungal infection of skin	0.9	1.8	1.4	2.1	< 0.002
8	Low back pain and syndromes	1.2	1.6	1.3	2.4	< 0.00001
9	Vaginitis, vulvitis, and cervicitis	1.6	1.2	1.8	1.4	< 0.01
10	Fibrositis, myalgia, and arthritis	1.3	1.5	1.2	1.8	< 0.01
11	Abdominal pain	0.9	1.5	1.1	1.4	NS
12	Headache	0.8	1.3	1.3	1.0	NS
13	Lacerations, contusions, and abrasions	1.1	1.8	1.1	0.9	< 0.00001
14	Dermatitis and eczema	1.2	1.3	1.0	1.3	NS
15	Diabetes mellitus	2.1	1.1	1.2	0.8	< 0.00001
16	Asthma	0.4	1.2	1.1	1.3	< 0.005
17	Viral warts	0.5	0.7	0.7	2.5	< 0.00001
18	Depression, anxiety, neuroses	0.8	1.8	0.8	1.3	< 0.00001
19	Contraception	1.4	1.2	1.4	0.4	< 0.00001
20	Urinary tract infections	1.1	0.9	1.4	0.6	< 0.00001

*Chi-square analysis with 3 degrees of freedom. NS = not significant.

part of the total patient load and could not account for all of the high frequency of the general medical examination.

Coincidentally with the ACDBS, the Army began a widely publicized health promotion campaign. This campaign could have directed the attention of both family physicians and patients to this area of health care. A periodic examination is a part of this campaign and is recorded as a general medical examination. Another explanation is that Army family physicians place greater emphasis on health promotion as a result of their training.

Pregnancy care is the second most frequent cluster, 10.1 percent. The decline in pregnancy care offered by nonfederal family physicians[17] has not occurred in the Army. Army family physicians are required to provide obstetric services and do not have the disincentive of higher malpractice premiums.

A systemwide factor influencing variation in diagnostic mix is subspecialist availability.[6] The exact effect cannot be calculated, but one site in our study is a separate clinic that does not have ready access to Army subspecialists. This lack would increase the frequency of some diagnoses and decrease the frequency of others, e.g., pregnancy care.

Our analysis of diagnosis clusters reveals a wide diversity in family practice, including both common problems and relatively complex and severe diseases, such as diabetes, asthma, and ischemic heart disease. Army "family practice is a broad specialty, oriented more to the full spectrum of illnesses . . . rather than to any particular subset of disease. . . ."[6]

Uncertain Diagnoses

Uncertain diagnoses have not been previously analyzed in family practice. The 2.8 percent of uncertain diagnoses is not easily explained. Our study does not measure diagnostic accuracy, nor is there any comparison literature from which to ascertain its accuracy.

Most uncertain diagnoses require some type of laboratory procedure; e.g., urinary tract infections or hematuria is diagnosed by a microscopic examination, rheumatoid disease by serologic examination, glaucoma by tonometry, and sexually transmitted diseases by culture or microscopic examination. The uncertainty of these diagnoses implies that the above diagnostic procedures are not being done by the family physicians, themselves, because they lack equipment, training, or more likely, time. Whereas nonfederal family physicians are reimbursed for procedures, Army family physicians have the disincentive of getting further behind in the appointment schedule, and it might be more time efficient to send the patient to the laboratory or subspecialist.

Other uncertain diagnoses are less understandable: strabismus, deafness, spine curvature, and otitis media. Perhaps the family physicians are not confident about their physical examinations or

they might have relied on laboratory reports or subspecialists to confirm the diagnosis to the exclusion of their own examination. The above uncertain diagnoses might reflect a lack of training in these areas so that confident diagnosing is lacking.

Procedures

Procedure frequency varies with patient age, as younger patients are more likely to have a procedure. Perhaps the younger patients do not communicate as well as adults so the family physicians seek diagnoses through procedures in children and rely more on patient history in adults.

Another explanation for this age variation might be that adults, with more chronic illness, visit their family physician more often, allowing better patient knowledge. Children might have received more episodic care, with the family physicians doing a more complete examination, including procedures, at each visit.

Intra-Army Site Comparisons

Practice content varies within the Army. All studied variables differ among the facilities, with a marked difference in visit duration. Only one site maintains an average encounter time of less than the 15-minute appointment usually allotted. Site 1 has an average encounter time of 25 percent more than the others, which could be explained by the presence of residents at that site. Even site 2, without residents, however, has an encounter time 19 percent longer than site 3. The shorter visit duration at site 3 could be explained by the frequency of the different age groups, as it has the youngest patients among the sites.

Procedure frequency also varies. Site 4 records procedures in only 2.4 percent of encounters. This lack of procedures could represent coding or compliance bias, or as a separate clinic site 4 might have much less equipment and resources for procedures. If the recording is accurate, family physicians assigned to site 4 might consider training in diagnosing conditions and treating patients without the help of procedures. Site 4, however, also has the fewest uncertain diagnoses and the least amount of prenatal care. Perhaps procedures are fewer at site 4 for those reasons.

Site comparison lends itself to anticipatory training: family physicians at site 2 should be well trained in pediatric problems, site 4 family physicians in geriatrics, and family physicians at sites 1 and 3 in women's health care. No site is overwhelmed by soldier patients, which might have implications for military medicine curricula in family practice training.

There could be several reasons for the site differences in diagnosis clusters, aside from patient age. The higher frequency of the geriatric group in site 4 does not correspond to its lower frequency of chronic diseases.

Site 4 has few obstetric patients and more geriatric patients. Because it is a separate clinic without a labor and delivery suite, obstetric patients are referred to local civilian providers. This exclusion of obstetric patients would affect the rate of other diagnoses, such as fewer visits for contraception, and would free more appointments for the geriatric population. Given finite constraints on appointment numbers, this relation should be explored for its cost-effectiveness implications.

The frequency of some illnesses is plausibly higher in some sites. For example, a site in an area of profuse vegetation might have more extrinsic asthma; another site with a soldier population frequently on alert and frequently training away from the site might be associated with more stress and depression.

As in the nonfederal sector, Army family practice is not homogeneous.[6] Army family physicians see a variety of patients and conditions. Because regional differences in population characteristics are considerable, Army family practice must be flexible and adapt to patient needs and service constraints.

Limitations

This study is subject to both sampling and nonsampling errors that include reporting and processing errors and biases of nonresponse and incomplete response. There were attempts to minimize these errors, but the magnitude of bias is unknown. As this sample of Army family physicians is nonrandom, the study design does have biases that a random sample would avoid.

Our description of Army family practice will hold only for the specific conditions in effect during data collection (1986–1987). As demonstrated by the National Ambulatory Medical Care Survey studies between 1975 and 1985, the content of practice, the physicians, and the patients change in the nonfederal sector.[18,19] Because the same changes probably occur in Army family practice,

the findings from this study will not apply to future Army family practice. Neither are they likely to apply to other military family practices, and any generalization should be done with caution.

Statistical tests on a sample size this large are likely to show even small differences to be significant. When interpreting results, one must consider that such statistical significance might not have clinical or policy-making importance.

Lastly, it would have been helpful to know the number of different patients the 28,849 encounters represented. It is probable that the patient number is smaller than the encounter number because of a subset of patients making return visits. This inflation might have altered the demography of the patients described above.

Implications for Future Studies

Further research in the area of practice content, e.g., studying Army family practice inpatient content, would complement this study so that residency curricula can be designed to meet more of the knowledge and skill demands of family physicians.

Studies designed to capture the other work family physicians do are also needed. Findings from our study only hint at physician efforts that cannot be captured in ICD-9-CM rubrics, such as counseling, providing continuity of care, teaching residents, and maintaining the physician-patient relationship.

Further research on the ambulatory content of Army family practice is needed. Assessment of practice content must be on-going so that educators can recognize changes in needed skills and knowledge.[20]

Because of regional variation in both Army and nonfederal family practice, a future study could determine whether the practice content of a particular Army facility more closely resembles that of other Army facilities or regional nonfederal counterparts. Family practice researchers could also analyze new versus old patients, new versus previously diagnosed conditions, comorbid conditions, variation in diagnostic mix, patient population, and visit duration and resource utilization by physician age, degree type, years of practice, and practice arrangement. Studies could also compare family practice with other specialties in terms of resource utilization for tracer diagnoses and the proportion of care provided by each specialty for certain age groups and diseases. Findings from such studies can have important implications for personnel needs and manpower policies.

Summary

Environment does influence practice content. As in nonfederal family practice, Army family practice content is defined by the physician, patient demographics, disease incidence, practice characteristics, and other available specialists,[6] which result in marked variations among the Army sites.

Army family practice appears to accommodate itself to the communities served.[6] Results from our study show that Army family practice is "a uniquely flexible discipline."[6] Such flexibility allows family practice to be a foundation for Army medicine, located in any Army community, and sensitive to patient demographics, physician availability, hospital resources, and the local environment. Army family physicians can respond to the needs and constraints of the local community and its environment. This description of Army family practice is the first of its kind to provide information about family practice content in the largest system of socialized medicine in the United States.

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