

## Family Physicians and General Internists: Do They Treat Hypertensive Patients Differently?

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*This study compared 51 San Francisco Bay Area family physicians and 47 general internists in their treatment of hypertensive patients. Charts from 2254 patients of these physicians were reviewed. The average age and percentage of board certification of both groups of physicians are similar. Patients of general internists were slightly older than the family practice patients (average age 61 vs 59 years). The general internists saw significantly fewer patients per hour (3.0) than the family physicians (3.6). Family physicians were more likely to employ a registered nurse (33%) than were general internists (17%), and family physicians were twice as likely to delegate patient education to office staff than were the general internists.*

*The mean number and kinds of antihypertensive medications prescribed were similar. Internists did more laboratory testing, but the difference was not statistically significant. General internists were more likely to change medication when their patients' blood pressure was uncontrolled than were family physicians (in 60% vs 40% of patients,  $P = .02$ ), and they were also more likely to recall uncontrolled patients within 3 months than were family physicians (50% vs 35% of patients,  $P = .05$ ).*

*There was no significant difference in mean diastolic blood pressure or in hypertension-related behaviors, such as medication adherence, aerobic exercise, alcohol consumption, or amount of dietary salt, between the two patient groups; however, over 35% of patients of both groups had elevated blood pressure readings despite taking medications. Overall, there were more similarities than differences in the care physicians provided. Efforts to change physician performance in the treatment of hypertensive patients are still warranted and equally applicable to both groups.*

As of 1985 there were approximately 45,000 general internists, 40,000 family physicians, and 27,000 general practitioners in the United States.<sup>1</sup> These physicians provide over 40% of all office visits to physicians—30.5% of visits are to family physicians and general practitioners and 11.6% are to general internists.<sup>2</sup> The difference in practice styles, as well as comparisons of utilization and quality of care for these three groups, is of current concern.

Do they have different practice styles? Is the quality of care provided different?

Two main conclusions can be drawn from the literature. First, general internists see fewer patients per unit of time than family physicians.<sup>3-9</sup> Second, general internists do more laboratory and x-ray tests than family physicians.<sup>3-5,8,10-12</sup> In addition, studies have found a higher referral rate by internists.<sup>7,12</sup> Three recent studies have shown similar complexity of problems,<sup>4</sup> severity of illness,<sup>5,13,14</sup> and functional status<sup>7</sup> in the patients of both groups of physicians.

Hypertension is a common medical problem and as such can serve as a tracer condition for comparing the different treatment approaches. Hypertension is the most common problem seen by general internists, and the third most common one seen by family physicians.<sup>15</sup> Two studies have examined specialty difference in treating patients with hy-

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pertension. Clother and Wheaton,<sup>16</sup> in a survey of Maryland physicians, found internists do more laboratory tests than family physicians on hypertensive patients. They noted that family physicians were more cautious in recommending drug treatment and preferred nonpharmacologic therapy. Cherkin et al,<sup>9</sup> in a well-designed comparison of residency-trained family physicians and general internists, also found similar differences. Besides spending more time with each patient, general internists were twice as likely as family physicians to order laboratory and x-ray tests. For hypertensive patients, the average per visit charge for diagnostic tests by general internists was over twice as much as for family physicians.

This study of private practice primary care physicians is part of a broader study examining the effect of individualized continuing medical education (CME) programs on the treatment of hypertensive patients.<sup>17</sup> Research questions included the following:

1. In this private practice sample, could one confirm previously noted differences among physicians in the utilization of laboratory tests and visit length?

2. Were there any differences in medications prescribed? Using algorithms for appropriate treatment, were there any differences in monitoring side effects or for making medication changes in uncontrolled patients?

3. Since many family practice residency programs have an emphasis on health education, were family physicians more likely than general internists to give out more patient education materials or do more office counseling?

4. As attitude differences about drug and nondrug therapy have been noted between family physicians—general internists and general internists, do patients of family physicians have behaviors favoring nonpharmacologic treatment (such as more exercise, more relaxation practices, or better diet)?

5. Were there any differences in the degree of blood pressure control for patients of each type of physician?

This study differs from previous ones in analyzing the data of both residency-trained and nonresidency-trained family physicians and compares these two groups with general internists.

## METHODS

### Physician Selection

All primary care physicians in private practices and within 60 miles of San Francisco were eligible for the study. Comprehensive lists of eligible physicians were compiled from hospital staff membership lists, medical society

directories, and telephone yellow pages. A brief, personalized letter was sent to each physician (N = 1121) by the project's medical director. A stamped, addressed postcard was included so that the physician could respond to request additional information. Included with the additional information was a consent and enrollment form that requested demographic data from the physicians. The principal investigator telephoned all physicians and requested more information if they had not enrolled after a few weeks. One hundred eleven ultimately enrolled in the project. Ninety-eight are included in this report—the other 13 were not general internists or family physicians. Specialty was assigned from what the physicians said they were.

Physicians in the study were compared with the 1121 nonparticipant physicians by analyzing a random sample of 10%. The two groups were similar in age and sex. A similar proportion were internists, but the nonparticipants were significantly more likely than participants to be general practitioners (19% vs 6%), and the participants were twice as likely to be family physicians as the nonparticipants (44% vs 22%).

### Patient Selection

Patients of enrolled physicians were eligible if they were between 20 and 80 years of age, could read and write in either English or Spanish, had been under their physicians' care for at least 4 months, had two visits within the past year, were currently taking antihypertensive medications, had at least one diastolic blood pressure >90 mmHg at any time in the past, were free of any terminal illness, and were not on renal dialysis.

Since physicians were the study subjects, researchers had no direct contact with patients. The physicians' office staff were given specific instructions for choosing a consecutive sample using billing lists or the appointment book of 30 patients according to the selection criteria noted above. Research assistants reviewed the selected patients' medical records to verify eligibility. This process yielded an average of 23 patients in each practice for a total of 2254 patients.

### Medical Record Review

Medical records of these patients were abstracted to include information from up to six visits in the previous year. The National Heart, Lung, and Blood Institute has suggested that patients taking antihypertensive medication should maintain their diastolic blood pressure below 90 mmHg.<sup>18,19</sup> This standard for control was accepted for patients under 65 years of age but was raised to under 95

mmHg for older patients. Numbers and types of antihypertensive medications were noted. If the patient's diastolic blood pressure was uncontrolled on two consecutive visits, then action taken on the second visit was noted. This action included patient counseling, increasing medication dose, changing medication, or the scheduling of a return visit within 3 months as noted in the medical record. Findings on chemical analysis of blood were reviewed. If the patient was taking thiazide diuretics, then the presence or absence of yearly potassium, uric acid, calcium, and glucose measurements were noted. Yearly potassium levels were also noted if the patient used a potassium-sparing diuretic. If the potassium was  $<3.5$  or  $>5.5$  mmol/L (mEq/L), if the calcium was  $>2.62$  mmol/L ( $>10.5$  mg/dL), if the glucose was  $>6.67$  mmol/L ( $>120$  mg/dL) fasting or  $>8.33$  mmol/L ( $>150$  mg/dL) nonfasting in a nondiabetic patient, or if the uric acid was  $>595$   $\mu$ mol/L ( $>10$  mg/dL), then it was noted whether there was a medication or dosage change at that or a subsequent visit.

### Patient Survey

The self-reported behaviors, needs, and attitudes of patients were assessed with a four-page survey. The survey included items used by other investigators. A score for medication adherence was derived from one developed by Green and associates.<sup>20</sup> Based on a standard measurement adapted from Room,<sup>21</sup> patients recorded typical alcoholic beverage (beer, wine, and hard liquor) consumption during the past week. Sodium consumption during the previous week was assessed with the use of an unpublished checklist of 31 high-salt food items developed by a National Institutes of Health study group. A salt score was developed by combining use of salt in cooking or at the table<sup>22</sup> with the data from the food list. To calculate body mass index, weight was obtained from the medical record and patients recorded their height on the survey.

Exercise levels during 1 week were assessed using a list of 18 activities. Patients were asked how many times and how long they participated in each activity. Probable aerobic exercising was defined as doing any of the aerobic type exercises (brisk walking, jogging, and so on) for at least 20 minutes three times each week. Patients also listed any relaxation techniques used in the past week. They were asked to record their blood pressure level, if they knew it, and indicate whether they owned a blood pressure cuff.

Patients reported whether they received advice from their physicians about the targeted behaviors, had adequate information about them, and whether they wanted to learn more about them.

Surveys were mailed from the physician to the patients with a cover letter on the physician's stationery. Two fol-

**TABLE 1. DEMOGRAPHIC CHARACTERISTICS OF PHYSICIANS AND HYPERTENSIVE PATIENT POPULATIONS**

	Family Physicians (n = 51)	General Internists (n = 47)	P value
<b>Physicians</b>			
Age (mean years)	47.1	46.6	.81
Sex, female (%)	7.8	2.1	.41
Board certified (%)	82.4	83.0	.85
<b>Patients*</b>			
Age (mean years)	59.3	61.3	.02
Sex, female (mean %)	56.0	56.0	.95
Ethnic group			
White (mean %)	71.4	73.1	.78
Schooling (mean years)	12.1	12.5	.12

*\*Patient data were calculated for each physician's patients and are represented here as either the mean of the mean for each physician or mean percent*

low-up reminders were mailed to the nonresponders. The final response rate was 79% (N = 1781).

### Office Data

The office staff was interviewed to collect data on the type of nursing personnel in the practice, those personnel who were responsible for providing patient education, and the type of hypertensive patient educational materials available in the office. One point was given for the presence of materials in each of six subject areas (eg, weight, exercise, alcohol). The number and type of referral sources were identified. One point was given for the presence of a defined referral source in each of five areas (eg, nutrition, exercise, stress). The number of patients seen per hour was calculated by reviewing the appointment book for several days and noting the length of the office session and the number of patients seen during that period.

The physician was the unit of measurement. *t*-Tests or chi-squares were performed to compare the two specialty groups.

### RESULTS

Comparisons were first made between all family physicians (combining residency-trained and nonresidency-trained) and general internists. The demographic characteristics of both the physicians and their patients is displayed in Table 1. The average age and percentage of

TABLE 2. STRUCTURAL CHARACTERISTICS OF PHYSICIAN'S PRACTICE

Characteristics	Family Physicians (n = 51)	General Internists (n = 47)	P value
In solo practice (%)	51.0	42.6	.53
Registered nurse in practice (%)	33.3	17.0	.11
Physician is only responsible person for patient education (%)	68.6	85.1	.09
Number of patients seen per hour (mean)	3.6	3.0	.008
Variety of hypertension patient education materials (range 0-6) (mean)	2.6	2.6	.93
Variety of referral resources (range 0-5) (mean)	1.6	2.1	.07

board certification were similar. There were more female family physicians than female general internists. The patients of both groups were similar with regard to sex and ethnic group; however, the family physicians' patients were on the average 2 years younger, a statistically significant difference (59.3 vs 61.3,  $P = .029$ ).

The only significant difference between the characteristics of the physicians' practices was that family physicians saw more patients per hour than did the general internists (3.6 vs 3.0,  $P = .008$ ) (Table 2). Although not statistically significant, the following trends were noted: family physicians were more likely to be in solo practice, and family physicians were more likely to employ registered nurses in their practices. Family physicians were more likely to delegate patient education tasks to office staff than were general internists. In addition, general internists identified more outside referral resources than family physicians, although the kinds of in-office patient education materials were the same for both groups.

The prescribing of medications and monitoring for side effects are displayed in Table 3. General internists were somewhat more likely to prescribe more medications, especially vasodilators, than family physicians. They also ordered more laboratory tests. These differences, however, were not statistically significant. Thirty-eight percent of all patients had uncontrolled blood pressure (as defined in the Methods section), but there was no significant difference between specialties. The general internists were significantly more likely than the family physicians to have recorded that they counseled patients or changed medication when blood pressure was uncontrolled (60% vs 44%,  $P = .02$ ) and to have uncontrolled patients come back for another visit within 3 months (50% vs 35%,  $P = .05$ ).

Table 4 shows hypertension-related behaviors and outcomes of the patients of both groups. All areas showed no

TABLE 3. PHYSICIAN PRACTICE PATTERNS (data from 2254 patients)

Characteristics	Family Physicians (n = 51)	General Internists (n = 47)	P value
Number of medications prescribed (mean)	1.6	1.7	.11
Type of medication prescribed			
Diuretics (mean %)	79.0	77.1	.46
$\beta$ -Blockers (mean %)	41.8	40.5	.70
Central-acting agents (mean %)	21.0	21.2	.95
Vasodilators (mean %)	21.4	26.8	.08
Appropriate* laboratory test done within 1 year (mean %)	54.5	60.3	.15
Abnormal test result and action taken (mean %)	24.4	27.0	.64
Uncontrolled hypertensive patients (N = 860)			
Appropriate† action taken (mean %)	43.6	59.6	.02
Return visit within 3 months (mean %)	35.0	49.5	.05

\*Appropriate laboratory tests included blood potassium, glucose, uric acid, and calcium determinations for all patients on thiazide diuretics, and potassium determinations for patients on potassium-sparing diuretics

†Appropriate action meant that the medication dose was changed, a new medication was given, or that patients were counseled

significant differences—in knowledge, compliance, physical measurements, nutrition, exercise, or relaxation practice. The mean diastolic blood pressure recorded on the two most recent visits was the same for both groups, and the percentage who had their blood pressure controlled on the last recorded visit showed no significant difference.

Lastly, comparisons were made between the two groups of family physicians—those who completed an approved family practice residency and those who did not. In this sample there were 17 residency-trained and 34 nonresidency-trained family physicians. All measures that were in the previous four tables were analyzed for these two groups of family physicians.

The following significant differences were found: Residency-trained family physicians were younger (mean age 37.6 years vs 51.9 years,  $P = <.0001$ ) and had younger hypertensive patients (57.4 years vs 60.3 years),  $P = .03$ . Residency-trained physicians saw more patients per hour than nonresidency-trained ones (3.9 vs 3.4,  $P = .09$ ). The family practice residency-trained group was significantly more likely to recall uncontrolled patients for a visit within 3 months (50% vs 28% of patients,  $P = .03$ ). This differ-

ence between residency-trained and nonresidency-trained family physicians explains the lower rate of patient recall for uncontrolled patients by all family physicians compared with internists. There were no other significant differences found between the two subgroups of family physicians for all other measured values.

## DISCUSSION

The main finding of this study is that there were clearly more similarities than differences in this sample of family physicians and general internists in the treatment of hypertensive patients. Their patients were of similar race and sex; however, internists' patients were slightly older. This difference was much less than noted by Cherkin and his associates,<sup>7</sup> who found family physicians' patients were on the average 20 years younger; however, their study population included children and women needing obstetric care, while only hypertensive patients were included here.

The two types of physicians showed no significant difference in most of the process measures of care for hypertensive patients, such as laboratory tests ordered; in the treatment measures, such as percentage of patients on diuretics or  $\beta$ -blockers; in the patient educational measures, such as the availability of hypertension educational materials in the office or the percentage of patients who received physician advice about behavior change; in patient health behaviors, such as the percentage who own a blood pressure cuff, exercise, or follow a low-salt diet; in patient knowledge of their own blood pressure reading; in self-reported medication compliance; or in the outcome measures, such as mean diastolic blood pressure or percentage of patients with their blood pressure "controlled." Considering the differences in postgraduate training between the two specialties, it is remarkable that practice styles are so similar.

The few differences found between the two groups were not unexpected. This report confirms that family physicians see more patients per hour than internists, especially the residency-trained family physician, who saw an average of 3.9 patients per hour vs 3.0 for the general internist. This visit duration is of a magnitude similar to that noted by Cherkin et al,<sup>7</sup> who found general internists spend an average of 19.1 minutes face to face with their patients whereas family physicians spend 15.7 minutes—a 22% difference.

Additionally, if a patient had a diastolic blood pressure  $>90$  mmHg ( $<95$  mmHg if the patient was older than 65 years) on the last two office visits, internists changed the patient's medication or dosage or charted counseling activities more frequently than family physicians. That internists were quicker to change treatment could be a function

**TABLE 4. HYPERTENSIVE PATIENT BEHAVIOR AND OUTCOMES (data from 1781 patients)**

	Patients of Family Physicians	Patients of General Internists	P value
<b>Behaviors</b>			
Owns a blood pressure cuff (mean %)	28.1	28.0	.98
Could recall blood pressure (mean %)	60.2	61.5	.71
Medication adherence score (mean)	84.5	86.6	.12
Body mass index (mean)	28.1	27.9	.68
Number of alcoholic drinks per day (mean)	2.5	2.9	.31
Salt score (mean)	7.0	6.9	.75
Probable aerobic exerciser (mean %)	35.7	38.0	.46
Uses relaxation technique (mean %)	26.1	26.8	.79
Reports receiving advice from physician about behaviors (mean %)	34.9	37.0	.31
Desires more information from physician (mean %)	33.4	31.7	.31
<b>Outcomes</b>			
Diastolic blood pressure (mean mmHg)	87.0	86.3	.36
Blood pressure controlled (mean %)	60.5	63.5	.38

of family physicians having a more conservative management style,<sup>15</sup> spending less time with the patient (so that fewer changes could be done at each visit), or having less detailed office record keeping. Busier physicians record less in the medical chart,<sup>23</sup> however, and counseling activities are recorded least, even when done. Despite any differences in medication change or visit frequency, there was no difference in patient outcome (mean diastolic blood pressure or in proportion of patients with controlled blood pressure).

Measures of patient characteristics and behaviors were similar, suggesting that the two groups of hypertensive patients were not different in any substantive way. There was no evidence that one physician group did more or less office counseling than the other. Although family physicians spent less time per patient, a higher percentage employed a registered nurse, a finding probably related to a higher percentage of family physicians having assistance with patient education (31% vs 15%).

There were few significant differences in performance between residency-trained and nonresidency-trained family physicians, although there was a large age difference. The residency-trained group did have "uncontrolled" pa-

tients come back sooner and had fewer patients taking diuretics. Other measures showed no significant difference. Three factors may account for this overall similarity between groups: (1) the performance of both was similar, (2) there was a type II error (there was a difference, but the sample size was too small to show it), or (3) the factors examined in this study were not the right ones to exhibit the differences. The study used fairly standard measures that could be reproducibly abstracted from a medical chart or recalled by patients. Since there were only 17 family physicians who completed residency training compared with the 34 who did not, power calculations were made for several variables. A 5-mmHg difference in mean diastolic pressure could be detected with the existing number of physicians. However, a larger sample would be needed to assure there were no significant differences in the process measures.

This study had a number of limitations. Physician participants volunteered, and recruitment was from one geographic area. Although all major sources of physicians' addresses were used, the sample represents only about 10% of those who were invited to participate, and caution must be taken in generalizing these data to all family physicians and general internists. Both family physicians and general internists were selected the same way; however, all participants were instructed similarly on the criteria to select patients. The health status of the patients was not investigated outside the hypertension data. The selection criteria will tend to oversample patients with poor control, since they may visit the physician more frequently. Although there were no differences in patients' hypertension measures, it is possible that internists' patients had other illness (increased co-morbidity) that required more frequent visits. Charts for the presence of additional illness were not reviewed, although other studies have shown no significant differences in the severity of illness of patients seen by both groups.<sup>5,12,14</sup> It is also possible that family physicians might have had more hypertensive patients controlled through nonpharmacologic therapy than would the general internists. Finally, the patient survey of self-reported behaviors was not validated; however, the survey items were either self-evident or adapted from other published reports.<sup>20-22</sup>

The issue of physician time and reimbursement by specialty is of current concern. Do family physicians take less time per patient because of training, practice style, or lower reimbursement? Because the shorter office visit is characteristic of both residency-trained and nonresidency-trained family physicians, it is possible that the reason is related more to the reimbursement issue. As the net income of both groups is similar, general internists may meet these income needs and office expenses through increased utilization of laboratory tests and in generally higher reimbursement for similar services than family physicians.

Standards for the care of hypertensive patients, in terms

of workup and drug treatment,<sup>18,19</sup> have been well publicized. It should, therefore, come as no surprise that the medications used were similar. No standards of care for behavioral counseling exist, yet the behaviors of patients of both groups are similar and leave plenty of room for improvement. That only 28% of patients owned a blood pressure cuff, 35% were getting regular aerobic exercise, and 25% used relaxation techniques indicates that all physicians can assist the majority of their patients with behavior changes. Finally, only 60% to 65% of patients had blood pressures in the controlled range, using a definition more liberal than that recommended by the National High Blood Pressure Education Program.<sup>18,19</sup> Although this study did not include patients currently controlled on no medications (so the true denominator is not known), the number of patients with elevated blood pressure is of concern in this era of abundant antihypertensive medications. Compared with the ideal, the greatest room for improvement appears to lie in changing patients' behavior (such as salt intake, obesity, and exercise) rather than efforts to increase compliance with medication. Efforts to change physician performance should address combined programs or courses for both family physicians and internists, as well as joint projects aimed at increasing physicians' skills to help with patients' behavior change.

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#### References

- Schroeder SA: The making of a medical generalist. *Health Affairs* 1985; 4:22-46
- McLemore T, DeLozier J: 1985 Summary: National Ambulatory Medical Care Survey. In National Center for Health Statistics (Hyattsville, Md): Advance data from Vital and Health Statistics, No. 128. DHHS publication No. (PHS) 87-1250. Government Printing Office, 1987
- Noren J, Frazier T, Altman I, DeLozier J: Ambulatory medical care: A comparison of internists and family-general practitioners. *N Engl J Med* 1980; 302:11-16
- Mendenhall RC, Moynihan CJ, Radecki SE: The relative complexity of primary care provided by medical specialists. *Med Care* 1984; 22:987-1001
- Merenstein JH: A comparison of residency trained family physicians and internists. *Fam Med* 1984; 16:165-169
- Greenwald HP, Peterson ML, Garrison LP, et al: Interspecialty variation in office-based care. *Med Care* 1984; 22:14-29
- Cherkin DC, Rosenblatt RA, Hart LG, Schleiter MK: A comparison of patients and practices of recent graduates of family practice and general internal medicine residency programs. *Med Care* 1986; 24:1136-1150
- McLure CL, Gall EP, Meredith KE, et al: Family practice and internal medicine clinical judgment in a university setting. *J Fam Pract* 1986; 22:443-448
- Cherkin DC, Rosenblatt RA, Hart LG, et al: The use of medical

- resources by residency-trained family physicians and general internists. Is there a difference? *Med Care* 1987; 25:455-469
10. Smith DH, McWhinney IR: Comparison of the diagnostic methods of family physicians and internists. *J Med Educ* 1975; 50:264-270
  11. Scherger JE, Gordon MJ, Phillips TJ, Logerfo JP: Comparison of diagnostic methods of family practice and internal medicine residents. *J Fam Pract* 1980; 10:95-101
  12. Bertakis KD, Robbins JA: Gatekeeping in primary care: A comparison of internal medicine and family practice. *J Fam Pract* 1987; 24:305-309
  13. Franks P, Dickinson JC: Comparison of family physicians and internists. Process and outcome in adult patients at a community hospital. *Med Care* 1986; 24:941-948
  14. Strauss MJ, Conrad D, LoGerfo JP, et al: Cost and outcome of care for patients with chronic obstructive lung disease. *Med Care* 1986; 24, 915-924
  15. Rosenblatt RA, Cherkin DC, Schneeweiss R, Hart LG: The content of ambulatory medical care in the United States. An interspecialty comparison. *N Engl J Med* 1983; 309:892-897
  16. Clothier TP, Wheaton PK: Physician approach to the recognition of initial management of hypertension. Results of a statewide survey of Maryland physicians. *Arch Intern Med* 1986; 146:529-533
  17. Gullion DS, Tschann JM, Adamson TE: Physicians' management of hypertension. A randomized controlled CME trial. Proceedings of the 26th Annual Conference of Research in Medical Education. Washington, DC, American Association of Medical Colleges, 1987
  18. The 1984 Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure. *Arch Intern Med* 1984; 144:1045-1057
  19. The 1988 Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure. *Arch Intern Med* 1988; 148:1023-1038
  20. Green LW, Levine DM, Wolle J, Deeds S: Development of randomized patient education experiments with urban poor hypertensives. *Patient Counseling Health Educ* 1979; 1:106-111
  21. Room R: Measuring alcohol consumption in the United States: Methods and rationales. In Kozlowski L (ed): *Research Advances in Alcohol and Drug Programs*. New York, Plenum, in press
  22. Dahl LK, Love RA: Evidence for relationships between sodium (chloride) intake and human essential hypertension. *Arch Intern Med* 1954; 94:525-531
  23. Hulka BS: Quality of ambulatory care: An explanation of the discrepancy between explicit process criteria and performance. In National Center for Health Services Research (Rockville, Md): *Research Summary Series*. DHHS publication No. (PHS) 80-3244. Government Printing Office, 1980