

Change in Self-Definition from Specialist to Generalist in a National Sample of Physicians

Nicholas A. Christakis, MD, MPH, MA; Jerry A. Jacobs, PhD; and Carla M. Messikomer, PhD

■ **Objective:** Current proposals to reform the health care system call for a physician work force composed of at least 50% generalists. Achieving this objective will likely require that some physicians who are currently specialists become generalists. We sought to determine the extent of such change before any concerted reform efforts and the types of physicians most amenable to such change.

■ **Design:** Retrospective cohort study.

■ **Participants:** 335 438 physicians in active practice.

■ **Measurements:** Rates of change between 1982 and 1986 in self-defined specialties, analyzed with demographic methods and logistic regression.

■ **Results:** In 1982, our participants comprised 134 647 (40.1%) generalists and 200 791 (59.9%) specialists. Over the 4-year period of the study, 8319 (6.2%) of the generalists became specialists and 4322 (2.2%) of the specialists became generalists. Although physicians younger than 40 years of age were more likely than those older than 40 years of age to switch into generalist disciplines, specialist physicians between the ages of 40 and 69 years (who accounted for 62.0% of the physician work force) made most of the moves into generalist fields (58.4%). After adjustment for other factors, the physicians most likely to switch into generalist disciplines were women, subspecialty internists, emergency medicine physicians, subspecialty pediatricians, and pathologists. In 1986, the 130 650 physicians (38.9%) in this cohort who considered themselves generalists were supplemented by another 49 226 (14.7%) who considered themselves to have a secondary interest in generalist practice. Physicians with such a secondary interest in 1982 constituted 65% of the new generalists in 1986.

■ **Conclusions:** Our findings support three principal conclusions. First, change from specialist to generalist disciplines is not uncommon, even for physicians older than 40 years of age. Second, many physicians already consider a generalist discipline to be a secondary emphasis of their practices. And third, efforts to retrain specialists to be generalists might effectively target those physicians predisposed to become generalists.

Many current proposals to reform the U.S. health care system call for an increase in the number of generalist physicians. President Clinton's proposal, for example, advocates "shifting the balance in the graduate training of physicians from specialties to primary care," with "at least 50% of new physicians [being] trained in primary care" (1). Other commentators have also endorsed the idea of raising the proportion of primary care physicians in the work force to 50% or more (2-10). These proposals have been driven by the concern that an under-reliance on generalists compromises the quality, cost, and accessibility of health care (5, 6, 11-14).

It is increasingly clear, however, that the reform of undergraduate (15-17) or graduate (18, 19) medical education alone, no matter how thoroughgoing, will not raise the proportion of generalists in the physician work force to 50% quickly enough. Even if 50% of medical school graduates each year were to choose generalist careers, the goal would not be reached until 2040 (20). Given the lengthy delay that would result from using education reform alone, the Clinton plan and other proposals recommend that some specialists become generalists (1, 11, 21). Incipient changes in the marketplace, such as increasing salaries for generalists and fewer job openings for specialists, may be reinforcing this recommendation (22).

Are physicians amenable to changing from specialist to generalist disciplines? Previous research has shown that not all physicians remain in their initial specialties. Several early studies considered specialty changes among graduates from the classes of 1915 through 1950 (23-25). Two later studies found that many medical school graduates from the 1960s subsequently changed their fields of practice (26, 27). Formulating a realistic and effective physician work force policy, however, will require analysis of more recent trends in specialty mobility. The extent to which physicians are currently altering their professional self-definitions, and either entering or leaving generalist disciplines, is unknown. Moreover, if policymakers knew the characteristics of physicians who changed from specialist to generalist disciplines, work force policy initiatives could strive to support this target population. Conversely, if the characteristics of those physicians likely to change from generalist to specialist were known, efforts could be targeted to increase their retention rate.

Our study addresses physicians' movements between specialist and generalist disciplines by examining physicians' self-reported primary and secondary specialties. Compared with previous work in this area, our study examines a larger number of specialties, with more recent and more complete data, and uses multivariate statistical methods to adjust for potential confounding factors. Also, in contrast to previous studies, we examine the age profile of physicians who make career changes over a very broad age range. Our study examines shifts in professional iden-

Ann Intern Med. 1994;121:669-675.

From the University of Pennsylvania, Philadelphia, Pennsylvania. For current author addresses, see end of text.

remaining half of the specialty changes occur at a nearly even annual rate over the rest of physicians' careers between the ages of 40 and 69 years.

Entry into and Departure from Generalist Disciplines

Of the 335 438 physicians in our cohort, 134 647 (40.1%) were generalists by our definition in 1982. By 1986, 8319 (6.2%) of the generalists had left generalist practice, 2164 by making a complete change and 6155 by making a change in emphasis. Of the 200 791 specialists in 1982, 4322 (2.2%) became generalists by 1986, 1526 by making a complete change in specialty and 2796 by changing emphasis. A summary of these changes is provided in Figure 1.

The 200 791 physicians who were specialists in 1982 may be divided into two groups. The first, consisting of 155 340 physicians (77.4%), did not list a generalist field as a secondary emphasis of their practices. The second, consisting of 45 451 physicians (32.6%), did list a generalist field as a secondary emphasis. Of the former group, 1526 (1.0%) switched to generalist fields by 1986. Of the latter group, 2796 (6.2%) switched to generalist practice by 1986. The difference in the proportion switching in the two groups is highly significant (Pearson $\chi^2 = 4461$; $P < 0.001$), supporting the conclusion that specialists who already list generalist disciplines as a secondary emphasis of their practice were much more likely to switch to those disciplines. Seen from another perspective, 2796 of the 4322 specialists who switched into generalist practice (65%) had previously listed a generalist discipline as a secondary focus of their practice.

By 1986, there was thus a net loss of 3997 generalists in the cohort, and the pool of generalists had decreased to 130 650 (38.9%). However, although there was a net overall decrease in generalists, not every constituent category of generalist practice experienced a decrease; specifically, there was a slight net increase in the number of general practitioners and geriatricians during the period studied (data not shown).

It is noteworthy that in addition to the 130 650 generalists in 1986, 49 226 physicians (14.7% of the whole cohort) listed generalist disciplines as a secondary emphasis of their practice. This group listed their primary specialties as subspecialty internal medicine (57.7%), surgery (7.2%), emergency medicine (6.9%), psychiatry (4.7%), subspecialty pediatrics (4.1%), radiology (2.5%), anesthesiology (2.3%), neurology (2.1%), dermatology (1.4%), pathology (1.3%), subspecialty gynecology (0.4%), and "other" (9.5%).

Table 2 shows details of movement into and out of generalist disciplines. Most of the physicians entering generalist disciplines came from the internal medicine subspecialties (1444 physicians), mostly through a change in emphasis (1234 physicians); that is, the physicians who made up the largest number of new generalist physicians had, 4 years earlier, been subspecialty internists who identified a primary care specialty as a secondary emphasis of their practice. Similarly, most of the generalists leaving generalist disciplines (3906 physicians) entered subspecialties of internal medicine, again, principally through a change in emphasis (3306 physicians). The predominance of internists among the physicians switching to generalist disciplines is not surprising because, in 1982, the pool of

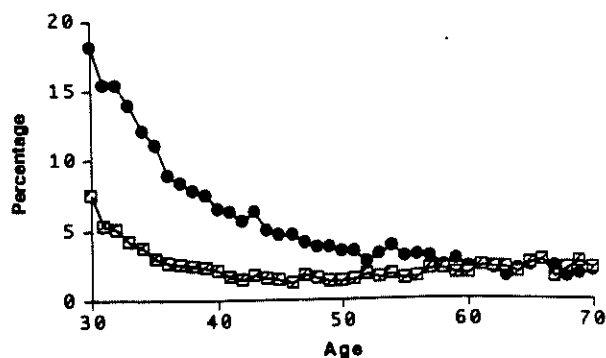


Figure 2. Percentage of physicians entering and leaving generalist disciplines by age. The graph illustrates the percentage of 200 791 specialists entering (◻) and the percentage of 134 647 generalists leaving (●) generalist disciplines, by age, over a 4-year period from 1982 to 1986. Age is as of 1984.

subspecialty internists who might have switched to generalist practice was large. In relative terms, however, the proportion of subspecialty internists switching was small: Of the pool of 29 530 subspecialty internists in 1982, only 210 (0.07%) made a complete change to a generalist discipline. On the other hand, of 2651 subspecialty pediatricians in 1982, 48 (1.8%) had made a complete switch to a generalist discipline by 1986. Similarly, of 10 139 pathologists in 1982, 135 (1.3%) had made a complete change to a generalist discipline by 1986. And of 7731 emergency medicine physicians in 1982, 356 (4.6%) had made a complete change to a generalist discipline by 1986. For physicians leaving generalist practice, the most common destinations of those making a complete change were internal medicine subspecialties (600 physicians), emergency medicine (517 physicians), pediatric subspecialties (158 physicians), surgery (136 physicians), anesthesiology (122 physicians), and psychiatry (103 physicians).

Figure 2 shows the age distribution of those entering and leaving generalist disciplines. The tendency of younger physicians to enter generalist disciplines from other fields decreases from 7.5% per 4-year period to 2.0% per 4-year period by the age of 40 and then remains relatively constant. However, 58.4% of all moves by U.S. physicians into generalist specialties were accomplished by physicians between the ages of 40 and 69 years, who constituted 62.0% of the physician labor force. By comparison, the rate of departure from generalist disciplines decreases steadily with age and does not reach the plateau that characterizes entry. The relation between the likelihood of switching specialty and age could represent either a change with age or a cohort effect, whereby people entering medicine in different eras behave differently; it is not possible to distinguish the two using our data (35). The age pattern of changes shown in Figure 2 also reinforces the point made earlier that even if newly trained physicians (such as those less than 40 years of age) were excluded from the analysis, most changes in specialty would still occur; specialty mobility is not restricted to recent graduates who might be thought to waver in the self-report of their specialty.

Table 3 presents a multivariate logistic regression model predicting the odds of switching into generalist disciplines. After adjustment for other factors, women

Table 3. Risk Factors for Specialists to Switch to Generalist Disciplines*

Variable	Odds Ratio (95% CI)
Demographic variables	
Female sex	1.94 (1.48 to 2.55)†
Foreign graduate	1.66 (1.33 to 2.07)†
Age (ten year increment)‡	0.94 (0.85 to 1.05)
Certification	0.36 (0.28 to 0.45)†
Specialty	
Emergency medicine	6.58 (4.65 to 9.30)†
Pathology	3.23 (2.11 to 4.93)†
Subspecialty pediatrics	2.97 (1.51 to 5.85)†
Subspecialty internal medicine	1.51 (1.05 to 2.17)†
Dermatology	0.80 (0.29 to 2.26)
Anesthesiology	0.78 (0.47 to 1.31)
Radiology	0.69 (0.37 to 1.31)
Psychiatry	0.59 (0.37 to 0.96)†
Neurology	0.58 (0.21 to 1.64)
Other specialty	3.10 (2.10 to 4.57)†
Practice site	
Medical school	0.43 (0.25 to 0.73)†
Group	0.56 (0.38 to 0.83)†
Government hospital	0.61 (0.37 to 0.99)†
Solo or joint	0.72 (0.51 to 0.99)†
Other practice setting	0.98 (0.71 to 1.36)
Military	1.11 (0.68 to 1.80)

* A multivariate logistic regression model was used to predict the odds (with 95% CIs) of making the switch from specialist to generalist disciplines. Odds ratios greater than 1.0 imply an increased risk for switching. This model was evaluated on a one-in-four random sample of the 200 791 specialists practicing in 1982. All dichotomous variables were coded as 1 = present and 0 = absent; for sex, 0 = male and 1 = female. Omitted categories are "private hospital" for practice setting and "surgery" for specialty. The specialty "subspecialty gynecology" was merged into the omitted category of "surgery" because of the small number of physicians in "subspecialty gynecology."

† $P < 0.05$

‡ The reported odds ratio is for a 10-year increment in age.

were 94% more likely to switch into generalist disciplines than were men. When controlling for other attributes, age was not associated with switching to generalist disciplines. Previously certified physicians were 64% less likely to switch into generalist disciplines than those without certification, and graduates of foreign medical schools were 66% more likely to switch into generalist disciplines than were graduates of U.S. medical schools. Compared with surgeons, emergency medicine physicians were more than six times as likely, pathologists were three times as likely, subspecialty pediatricians were three times as likely, and subspecialty internists were 51% more likely to switch to generalist practice. Compared with surgeons, psychiatrists were 41% less likely to switch. Compared with physicians practicing in private hospitals, physicians in solo or joint practice were 28% less likely and those in group practice were 44% less likely to switch. In comparison to the foregoing model, physicians leaving generalist disciplines tended to be male, less than 40 years of age, and in hospital-based practice, and they typically moved to internal medicine subspecialties (data not shown).

Discussion

We have documented significant rates of interspecialty mobility. Every year, 1.2% of U.S. physicians take the major step of changing their broad specialty, 0.65% by making a complete change to a new one. Entry into com-

pletely new fields decreases until physicians are in their early 40s, after which rates of mobility remain relatively constant.

Because the number of physicians leaving generalist disciplines exceeded the number entering them, the proportion of generalist physicians in the cohort decreased from 40.1% to 38.9% during the study period. Nevertheless, a substantial number of specialists ($n = 4322$) swam against the tide and switched to generalist disciplines. Those specialists entering generalist specialties tended to be female, graduates of foreign medical schools, and located in hospital-based practices. They tended to come from internal medicine subspecialties, emergency medicine, pediatric subspecialties, and pathology. They were from across the entire age range.

Our findings have several implications for health care reform. First, change in broad specialty is neither impossible nor uncommon, even when a physician is more than 40 years of age. The significant proportion of physicians changing specialties suggests that retraining physicians might be a feasible means of reallocating physicians into generalist disciplines. Although physicians less than 40 years of age are more likely to switch, more than half of all changes to generalist practice in the U.S. physician work force are made by physicians who are more than 40 years of age. This is not surprising because physicians between the ages of 40 and 69 years account for 62.0% of the specialist physician labor force. Of course, older physicians may differ from younger physicians in many important, unmeasured attributes, such as the number of hours per year they devote to patient care.

Second, many physicians in specialty practice—14.7% of the cohort in 1986—list a generalist discipline as a secondary emphasis of their practices. These physicians, who appear more likely to switch to generalist disciplines than do other specialists, would be good targets of efforts to increase the number of generalists. Indeed, they account for 65% of all physicians in our cohort switching into generalist fields. Because provision of primary care by specialists has been criticized as potentially unduly costly (11, 12, 36) and fragmented (37, 38), those specialists who change their emphasis to generalist disciplines should also be targeted for continuing medical education to improve their primary care skills.

Third, because departures from generalist disciplines are more numerous than entries into generalist disciplines in this cohort, a strategy for decreasing the rate of departure from generalist specialties is also essential. A substantial number of primary care physicians leave generalist practice every year—a loss that, if stemmed, might rapidly boost the proportion of generalist physicians. Efforts might be targeted to male generalists less than 40 years of age, especially those in hospital practice.

Fourth, efforts to increase the influx of physicians into generalist practice might effectively and efficiently target populations who are apparently predisposed toward making such a shift: women, subspecialty internists, subspecialty pediatricians, emergency physicians, pathologists, and physicians in hospital-based practice. Because the primary care specialties have not traditionally been considered to have high prestige, the fact that many physicians with the foregoing characteristics changed their professional identities—from medical specialist to medical generalist—is noteworthy.

Our results must be interpreted with caution because we were obliged to rely on self-reported specialties. Nevertheless, our findings suggest that even before any systematic, external efforts to meet policy objectives by retraining physicians were implemented, a substantial fraction of physicians across the entire age range were willing to change their professional identities and stated practices. We believe that the observed prevalence of volitional change in professional self-definition provides an appropriate substrate for current efforts to change both what physicians say they do and what they actually do with respect to their practices. However, current efforts should not, in our opinion, unduly constrain the choices physicians make in their careers. Incentives to enter generalist disciplines rather than disincentives to leave are, in our opinion, more likely to succeed.

Our study has several additional limitations. First, our analysis is based on data from the mid-1980s and thus warrants replication using more recent data; this will be especially important once the proposed organizational and economic changes in U.S. health care delivery are implemented. Our data thus serve as a baseline. Second, defining who is a generalist is somewhat arbitrary and, indeed, many specialists provide some generalist care even if they do not consider themselves to be doing so. Data on hours devoted to various activities and on other practice parameters could add much needed detail to the results presented here regarding change in self-designated specialty. Third, we do not know the extent to which the changes in specialty that we observed were permanent. And fourth, we know nothing about the motivations of the physicians in this cohort who changed specialties.

Although the reasons why generalists switch to specialty practice—including attributes of generalist practice such as the inherent uncertainty (39), the lack of autonomy, the lack of control over work schedule, the high degree of patient contact, and the relatively low pay (40)—have been relatively well examined, the reasons why specialists become generalists are less well understood. Our results show that specialists voluntarily adopt new professional identities and that physicians with particular characteristics may be predisposed to join the ranks of generalists. Although these data can inform current proposals to enlarge the pool of primary care providers, more information on physician characteristics and on the dynamics of specialty fields from which the greatest outflows have occurred is needed. A better understanding of the complex interplay between cultural, occupational, economic, and individual factors that motivate physicians to leave one specialty and enter another is essential. Individual characteristics alone cannot account for the mobility patterns we have documented. In some cases, positive features of a given field, such as the regularity of work hours, may pull physicians toward it. Conversely, negative factors may push physicians away from a field. For example, women may opt to practice general medicine to escape discrimination or perceived discrimination in specialist fields. If this is indeed the case, efforts to achieve the proposed objective of having 50% generalists should not proceed without examination and modification of any adverse factors that might be at play.

An understanding of the reasons physicians change specialties in general, and move from specialist to generalist

disciplines in particular, is fundamental to our understanding of the physician labor supply. Although they are not a panacea, efforts to increase the proportion of generalist physicians have merit. The mobility between specialties could potentially be harnessed to achieve this objective of health care reform.

Acknowledgments: The authors thank Samuel Preston, PhD, for assistance with the demographic aspects of this paper and Paul Allison, PhD, David Asch, MD, Chris Feudtner, MD, PhD, Renée C. Fox, PhD, Sandy Schwartz, MD, and Sankey Williams, MD, for their helpful suggestions.

Grant Support: In part by an NRSA Fellowship from the Agency for Health Care Policy and Research, a Warren-Whitman-Richardson Fellowship from Harvard Medical School, a Peter W. Swazey Fellowship from The Acadia Institute, and a grant from the Boettner Institute of Financial Gerontology (NAC), and a grant from the Leonard Davis Institute of Health Economics and the University of Pennsylvania Institute on Aging, and fellowship support from the Russell Sage Foundation (JAJ).

Requests for Reprints: Nicholas A. Christakis, MD, 338 Fitzwater Street, Philadelphia, PA 19147.

Current Author Addresses: Dr. Christakis: 338 Fitzwater Street, Philadelphia, PA 19147.
Dr. Jacobs: Department of Sociology, University of Pennsylvania, 3718 Locust Walk, Philadelphia, PA, 19104.
Dr. Messikomer: 114 Timber Springs Lane, Exton, PA, 19341.

References

1. The White House. "Proposal to Reform the American Health Care System," draft, September 7, 1993.
2. Council on Graduate Medical Education. Improving Access to Health Care through Physician Work force Reform: Directions for the 21st Century. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Health Resources and Services Administration; 1992.
3. Pew Health Commission Staff. Primary Care Work Force 2000: Federal Health Policy Strategies. San Francisco: Pew Health Professions Commission; 1993.
4. Josiah Macy, Jr. Foundation. Annual Report—Josiah Macy, Jr. Foundation. New York: Josiah Macy, Jr. Foundation; 1992.
5. Rivo ML, Satcher D. Improving access to health care through physician work force reform. Directions for the 21st century. JAMA. 1993; 270:1074-8.
6. Baroness JA. The future of generalism. Ann Intern Med. 1993;119:153-60.
7. Pew Health Professions Commission. Health professions education for the future: schools in service to the nation. San Francisco: Pew Health Professions Commission; 1993.
8. Schroeder SA. Western European responses to physician oversupply. Lessons for the United States. JAMA. 1984;252:373-84.
9. Rockefeller J, Waxman H. The Primary Care Work Force Act of 1993. Washington, DC: U.S. Congress: (S)1315; (HR) 2804.
10. Physician Payment Review Commission. Annual report to Congress. Washington, D.C.: Physician Payment Review Commission; 1993.
11. Rivo ML. Internal medicine and the journey to medical generalism. Ann Intern Med. 1993;119:146-52.
12. Franks P, Clancy CM, Nutting P. Gatekeeping revisited—protecting patients from overtreatment. N Engl J Med. 1992;327:424-9.
13. Rosenblatt RA. Specialists or generalists. On whom shall we base the American health care system? JAMA. 1992;267:1665-6.
14. Wright RA. Community-oriented primary care. The cornerstone of health care reform. JAMA. 1993;270:2544-7.
15. Rabinowitz HK. Evaluation of a selective medical school admissions policy to increase the number of family physicians in rural and underserved areas. N Engl J Med. 1988;319:480-6.
16. Levinsky NG. Recruiting for primary care. N Engl J Med. 1993;328: 656-60.
17. Rosenblatt RA, Whitcomb ME, Cullen TJ, Lishner DM, Hart LG. The effect of federal grants on medical schools' production of primary care physicians. Am J Public Health. 1993;83:322-8.
18. Noble J, Friedman RH, Starfield B, Ash A, Black C. Career differences between primary care and traditional trainees in internal medicine and pediatrics. Ann Intern Med. 1992;116:482-7.
19. Cohen JJ. Transforming the size and composition of the physician work force to meet the demands of health care reform. N Engl J Med. 1993;329:1810-2.
20. Kindig DA, Cultice JM, Mullan F. The elusive generalist physician. Can we reach a 50% goal? JAMA. 1993;270:1069-73.

21. **Lundberg GD, Lamm RD.** Solving our primary care crisis by retraining specialists to gain specific primary care competencies. *JAMA.* 1993; 270:380-1.
22. **Gesensway D.** Specialists to generalists: reformers look to retrofit physicians. *ACP Observer.* 1993;13:1.
23. **Monk MA, Terris M.** Factors in student choice of general and specialty practice. *N Engl J Med.* 1956;255:1135-40.
24. **Weiskotten HG, Wiggins WS, Altenderfer ME, Gooch M, Tipner A.** Changes in professional careers of physicians: an analysis of a survey of physicians who were graduated from medical college in 1935, 1940, and 1945. *J Med Educ.* 1961;36:1565-85.
25. **Weiss JE.** Socioeconomic and technological factors in trends of physicians to specialize. *HSMHA Health Rep.* 1971;86:46-51.
26. **Holden WD, Levit EJ.** Migration of physicians from one specialty to another. A longitudinal study of US medical school graduates. *JAMA.* 1978;239:205-9.
27. **Erdmann JB, Jones RA, Toness X, Dudley ME.** AAMC longitudinal study of medical school graduates of 1960. Hyattsville, MD: U.S. Department of Health, Education, and Welfare, Public Health Service, Office of Health Research, Statistics and Technology, National Center for Health Services Research; 1979.
28. **Graduate Medical Education National Advisory Committee.** Report of the Graduate Medical Education National Advisory Committee. Hyattsville, MD: U.S. Department of Health and Human Services, Public Health Service, Health Resources Administration, Office of Graduate Medical Education; 1981.
29. **Stevens RA.** Defining and certifying the specialists. In: E Ginzberg, M Ostow, eds. *The Coming Physician Surplus: In Search of a Policy.* Totowa, NJ: Rowman & Allanheld; 1984:83-98.
30. **Aiken LH, Lewis CE, Craig J, Mendenhall RC, Blendon RJ, Rogers DE.** The contribution of specialists to the delivery of primary care. *N Engl J Med.* 1979;300:1363-70.
31. **Center for Health Services Research and Development.** Physician distribution and medical licensure in the U.S. Chicago: Center for Health Services Research and Development, American Medical Association; 1979.
32. **American Medical Association.** Physician characteristics and distribution in the U.S. Chicago: American Medical Association; 1984.
33. **Kindig DA.** Counting generalist physicians. *JAMA.* 1994;271:1505-7.
34. **Rivo ML, Sautz JW, Wartman SA, DeWitt TG.** Defining the generalist physician's training. *JAMA.* 1994;271:1499-504.
35. **Hobcraft J, Menken J, Preston S.** Age, period, and cohort effects in demography: a review. In: Mason WM, Fienberg SE, eds. *Cohort Analysis in Social Research.* New York: Springer-Verlag; 1985:89-136.
36. **Greenfield S, Nelson EC, Zubkoff M, Manning W, Rogers W, Kravitz RL, et al.** Variations in resource utilization among medical specialties and systems of care. Results from the medical outcomes study. *JAMA.* 1992;267:1624-30.
37. **Roland M, Morris R.** Are referrals by general practitioners influenced by the availability of consultants? *BMJ.* 1988;297:599-600.
38. **Wasson JH, Sauvigne AE, Mogielnicki RP, Frey WG, Sox CH, Gaudette C, et al.** Continuity of outpatient medical care in elderly men. A randomized trial. *JAMA.* 1984;252:2413-7.
39. **Geller G, Faden RR, Levine DM.** Tolerance for ambiguity among medical students: implications for their selection, training and practice. *Soc Sci Med.* 1990;31:619-24.
40. **Lewis CE, Prout DM, Chalmers EP, Leake B.** How satisfying is the practice of internal medicine? A national survey. *Ann Intern Med.* 1991;114:1-5.

Appendix

Broad Specialty	American Medical Association Detailed Specialty	(Continued)	
Generalist Disciplines	Family practice	Neurology	Child neurology
	General practice		Neurology
	General preventive medicine	Subspecialty Gynecology	Gynecologic oncology
	Geriatrics		Maternal and fetal medicine
	Internal medicine, no subspecialty listed	Pathology	Reproductive endocrinology
	Gynecology		Forensic pathology
	Obstetrics		Anatomical pathology
	Obstetrics and gynecology		Anatomical/clinical pathology
	General pediatrics		Bloodbanking
	Colon and rectal surgery		Clinical pathology
	Abdominal surgery		Chemical pathology
	Cardiovascular surgery		Dermatopathology
	General surgery		Immunopathology
Surgery	Hand surgery		Medical microbiology
	Head and neck surgery		Neuropathology
	Pediatric surgery	Subspecialty Pediatrics	Radioisotopic pathology
	Traumatic surgery		Adolescent medicine
	Vascular surgery		Neonatal-perinatal medicine
	Neurologic surgery		Pediatric endocrinology
	Ophthalmology		Pediatric hematology-oncology
	Orthopedic surgery		Pediatric nephrology
	Facial plastic surgery		Pediatric allergy
	Otolaryngology	Psychiatry	Pediatric cardiology
	Plastic surgery		Child psychiatry
	Thoracic surgery		Psychiatry
	Urologic surgery	Radiology	Psychoanalysis
Subspecialty Internal Medicine	Allergy		Diagnostic radiology
	Cardiovascular diseases		Nuclear medicine
	Gastroenterology		Nuclear radiology
	Allergy and immunology		Pediatric radiology
	Diabetes		Radiology
	Diagnostic immunology	Emergency Medicine	Therapeutic radiology
	Endocrinology	Dermatology	Emergency medicine
	Hematology	Anesthesiology	Dermatology
	Immunology	Other	Anesthesiology
	Infectious diseases		Aerospace medicine
	Nephrology		Clinical pharmacology
	Nutrition		Legal medicine
	Oncology		Occupational medicine
Rheumatology		Physical medicine and rehabilitation	
Pulmonary diseases		Public health	
Critical care medicine		Other specialty, not listed	

Annals of Internal Medicine

Published Twice Monthly by the American College of Physicians

■ Ad Libitum 718

■ Letters 719

Injury, Death, and Cholesterol

Case Management after Acute Myocardial Infarction

Persistently Perplexing Purpuras: TTP and ITP

Clozapine-related Pancreatitis

Hepatic Injury after Interferon- α Therapy for Chronic Hepatitis C

Ethics Committees

Attitudes about Guidelines

■ The Literature of Medicine 727

The Internist's Reading: Outsider and Insider Views

■ ARTICLES

Calcitriol Production in Hypercalcemic and Normocalcemic Patients with Non-Hodgkin Lymphoma 633 Seymour, Gagel, and others

Cholesterol and Coronary Heart Disease: Predicting Risks by Levels and Ratios 641 Kinosian, Glick, and Garland

Interferon- α Treatment of Six Patients with the Idiopathic Hypereosinophilic Syndrome 648 Butterfield and Gleich

Cyclospora Infection in Adults Infected with HIV 654 Pape and others

Effect of Natural Oxygen Enrichment at Low Altitude on Oxygen-dependent Patients with End-Stage Lung Disease 658 Kramer, Springer, Berkman, and others

■ BRIEF COMMUNICATIONS

Isospora belli Infection Associated with Acalculous Cholecystitis in a Patient with AIDS 663 Benator, French, and others

Treating a Patient with the Werner Syndrome and Osteoporosis Using Recombinant Human Insulin-like Growth Factor 665 Rubin, Reed, Sakhaee, and Pak

■ ACADEMIA AND CLINIC

Change in Self-Definition from Specialist to Generalist in a National Sample of Physicians 669 Christakis, Jacobs, and Messikomer

■ REVIEW

Interactions of Warfarin with Drugs and Food 676 Wells and others

■ BASIC SCIENCE REVIEW

The Role of Leukotrienes in Inflammation 684 Henderson

■ NIH CONFERENCE

Asthma 698 Goldstein and others

■ EDITORIALS

Lymphoma, Hypercalcemia, and the Sunshine Vitamin 709 Cox and Haddad

The Physician Work Force: Does the Marketplace Set National Policy? 712 Fletcher and Moore

■ POSITION PAPER

Physician Assistants and Nurse Practitioners 714 American College of Physicians

■ ON BEING A DOCTOR

A Pill for Old People 717 Cass

For complete contents, see pages 1-3 and 1-4. For subscription information, see page 1-7. Canadian GST ID# 128512159 · AIMEAS 121(9)633-728(1994) · US ISSN 0003-4819