

Trends in Market Demand for Internal Medicine 1999 to 2004

An Analysis of Physician Job Advertisements

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BACKGROUND: The health care marketplace has changed substantially since the last assessment of demand for internal medicine physicians in 1996.

METHODS: We reviewed internal medicine employment advertisements published in 4 major medical journals between 1996 and 2004. The number of positions, specialty, and other practice characteristics (e.g., location) were collected from each advertisement.

RESULTS: Four thousand two hundred twenty-four advertisements posted 4,992 positions. Of these positions, jobs in the Northeast (31% of positions) or single specialty groups (36.8% of positions) were most common. The relative proportion of advertisements for nephrologists declined ($P < .001$), while the relative proportions of advertisements for critical care specialists (0.5% in 1996 to 1.7% in 2004, $P = .004$) and hospitalists (1.0% in 1996 to 12.1% in 2004, $P < .001$) increased. Advertisements for outpatient-based generalist positions (i.e., Primary Care and Internal Medicine) declined (-2.7% relative annual change, 95% confidence interval [95% CI] -4.1% , -1.2%) between 1996 and 2004, a decrease largely due to a substantial decline in advertisements noted between 1996 and 1998. However, over the entire time period, the combined proportion of advertisements for all generalists (hospitalists and outpatient-based generalists) did not change (0.5% relative annual change, 95% CI -0.8% to 2.0%).

CONCLUSIONS: Since 1996, demand for the majority of medical subspecialties has remained constant while relative demand has decreased for primary care and increased for hospitalists and critical care. Increase in demand for generalist-trained hospitalists appears to have offset falling demand for outpatient generalists.

KEY WORDS: physician workforce; primary care; hospitalists; internal medicine.

DOI: 10.1111/j.1525-1497.2006.00558.x
J GEN INTERN MED 2006; 21:1079–1085.

Over the last 2 decades, internal medicine has seen major shifts in the perception of need for generalists and specialists, whether outpatient or inpatient-based. The first—toward generalism and managed care—was noted at about the time of publication of the Medical Outcomes Study,^{1,2} which suggested generalist and specialist care for longitudinal illnesses produced equivalent outcomes, but generalist care was substantially less expensive. In the late 1980s and early 1990s, it was further promoted by the growth of managed care, which embraced generalist-based gate keeping as an important part of its cost-containment strategy.³ The period of primacy for generalists was followed by a perceived shift back to the benefits of subspecialty care, prompted by evidence suggesting the superiority of specialist care for a variety

of medical conditions and decline in use of the “gatekeeper” model.^{4–10}

Most recently, a third shift in internal medicine has been the emergence of a division between physicians who practice primarily in outpatient settings and those who practice primarily in hospitals. These latter physicians, termed hospitalists, are predominantly generalist-trained.^{11,12} This period was also marked by growing awareness of the need for critical care-trained physicians or “intensivists,”¹³ another inpatient-focused, albeit subspecialty trained, physician specialty. Demand for intensivists has been accentuated by reports suggesting improved patient outcomes in critical-care-staffed intensive care units,^{14,15} as well as by active promotion of their use by the Leapfrog Group, an influential business coalition.^{16–18}

Despite the importance of these trends, few data describe demand for internal medicine physicians since 1996. We hypothesized that recent trends would affect demand for internal medicine physicians, potentially diverting demand from traditional internal medicine generalist, and subspecialty areas toward hospital medicine. To examine these hypotheses, we reviewed physician advertisements published in major internal medicine journals between 1996 and 2004.

METHODS

Design

Our study was a retrospective review of advertisements published in U.S. medical journals between 1996 and 2004.

Advertisement Selection

To provide cross-comparability with older publications, we examined advertisements from the *Annals of Internal Medicine*, *Journal of the American Medical Association*, *New England Journal of Medicine*, and *Archives of Internal Medicine*. In previous studies, as in ours, these journals were chosen because they are considered the primary set of journals read by internists, and the journals where most advertisements are posted. Because September is thought to be the peak period for job postings,¹⁹ and to further increase cross comparability, we selected advertisements published in the first September edition for each journal for each year.

In contrast to previous studies, some of which also examined trends in surgical and pediatric advertisements,^{19–23} we focused our abstraction process on advertisements for internal medicine and internal medicine subspecialties.

No conflicts of interest to declare.

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Manuscript received January 11, 2006

Initial editorial decision February 24, 2006

Final acceptance May 12, 2006

Table 1. Characteristics of Advertisements 1996 to 2004

| Variable | Value |
|--|---------------|
| Number of advertisements | 4,224 |
| Single position listed (% of advertisements) | 3,520 (83.3%) |
| Two positions listed (% of advertisements) | 640 (15.2%) |
| >2 positions listed (% of advertisements) | 64 (1.5%) |
| Total number of positions advertised | 4,992 |
| Location (n, % of positions) | |
| Northeast (ME, VT, MA, RI, CT, NY, NH, PA, MD, NJ, DE, DC) | 1,546 (31.0%) |
| Southeast (AL, AR, MO, FL, GA, VA, NC, SC, WV, TN) | 986 (19.8%) |
| Central (MI, OH, IN, IL, WI, KY, MN, IA, ND, SD, NE, KS) | 770 (15.4%) |
| South-central (TX, OK, NM, LA, MS) | 298 (6.0%) |
| Mountain (UT, CO, NV, ID, MT, WY) | 287 (5.8%) |
| West (CA, WA, OR, AK, HI, AZ) | 653 (13.1%) |
| National/not specified | 452 (9.0%) |
| Group size (n, % of positions) | |
| Large (>20) | 1,301 (26.1%) |
| Medium (4 to 20) | 419 (8.4%) |
| Small (0 to 4) | 851 (17.1%) |
| Unspecified | 2,421 (48.5%) |
| Group type (n, % of positions) | |
| Hospital practice | 681 (13.6%) |
| Single specialty | 1,836 (36.8%) |
| Multispecialty | 1,500 (30.1%) |
| Unspecified | 975 (19.5%) |
| Academic affiliation (n, % of positions) | 714 (14.3%) |
| Journal where published (n, % of positions) | |
| <i>New England Journal of Medicine</i> | 3,202 (64.1%) |
| <i>Journal of the American Medical Association</i> | 578 (11.6%) |
| <i>Annals of Internal Medicine</i> | 995 (19.9%) |
| <i>Archives of Internal Medicine</i> | 217 (4.4%) |

ME, Maine; VT, Vermont; MA, Massachusetts; RI, Rhode Island; CT, Connecticut; NY, New York; NH, New Hampshire; PA, Pennsylvania; MD, Maryland; NJ, New Jersey; DE, Delaware; DC, District of Columbia; AL, Alabama; AR, Arkansas; MO, Missouri; FL, Florida; GA, Georgia; VA, Virginia; NC, North Carolina; SC, South Carolina; WV, West Virginia; TN, Tennessee; MI, Michigan; OH, Ohio; IN, Indiana; IL, Illinois; WI, Wisconsin; KY, Kentucky; MN, Minnesota; IA, Iowa; ND, North Dakota; SD, South Dakota; NE, Nebraska; KS, Kansas; TX, Texas; OK, Oklahoma; NM, New Mexico; LA, Louisiana; MS, Mississippi; UT, Utah; CO, Colorado; NV, Nevada; ID, Idaho; MT, Montana; WY, West Virginia; CA, California; WA, Washington; OR, Oregon; AK, Alaska; HI, Hawaii; AZ, Arizona.

Abstraction Process

All advertisement pages from the September issues were copied, and individual advertisements were identified by the investigative group (A.D.A., R.C., and J.S.) and numbered to ensure full and uniform identification of advertisements.

Each advertisement was examined for the type and number of positions available, the characteristics of the group placing the advertisement, the state or region where the advertisement was soliciting a position, academic affiliation, and salary offered. Specialty data were obtained from the text of the advertisement. If the advertisement text did not specify a specialty, we assumed that the special-

Table 2. Trends in Advertisements for all Internal Medicine Specialties, 1996 to 2004

| | Year of Publication | | | | | |
|--------------------------------------|---------------------|-------------|-------------|-------------|-------------|-------------|
| | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
| Cardiology, interventional (n, %) | 28 (7.3%) | 31 (7.9%) | 50 (9.2%) | 53 (9.2%) | 56 (8.6%) | 59 (8.7%) |
| Cardiology, noninterventional (n, %) | 53 (13.9%) | 61 (15.6%) | 98 (18.0%) | 98 (17.0%) | 110 (16.8%) | 100 (14.7%) |
| Critical care (n, %) | 2 (0.5%) | 5 (1.3%) | 8 (1.5%) | 6 (1.0%) | 26 (4.0%) | 15 (2.2%) |
| Endocrine (n, %) | 4 (1.0%) | 15 (3.8%) | 14 (2.6%) | 13 (2.2%) | 15 (2.3%) | 18 (2.6%) |
| Gastroenterology (n, %) | 18 (4.7%) | 18 (4.6%) | 50 (9.2%) | 72 (12.5%) | 80 (12.3%) | 80 (12.5%) |
| Geriatrics (n, %) | 4 (1.0%) | 10 (2.6%) | 9 (1.7%) | 5 (0.9%) | 7 (1.1%) | 6 (0.9%) |
| Hematology oncology (n, %) | 13 (3.4%) | 11 (2.8%) | 30 (5.5%) | 17 (2.9%) | 32 (4.9%) | 32 (4.7%) |
| Hospitalist (n, %) | 4 (1.0%) | 22 (5.6%) | 30 (5.5%) | 29 (5.0%) | 30 (4.6%) | 51 (7.5%) |
| Infectious disease (n, %) | 16 (4.2%) | 10 (2.6%) | 20 (3.7%) | 28 (4.8%) | 16 (2.5%) | 29 (4.3%) |
| Internal Medicine (n, %) | 166 (43.5%) | 149 (38.1%) | 163 (29.9%) | 180 (31.1%) | 183 (28.0%) | 203 (29.9%) |
| Nephrology (n, %) | 37 (9.7%) | 23 (5.9%) | 29 (5.3%) | 40 (6.9%) | 24 (3.7%) | 28 (4.1%) |
| Primary care (n, %) | 20 (5.2%) | 19 (4.9%) | 12 (2.2%) | 16 (2.8%) | 33 (5.1%) | 22 (3.2%) |
| Pulmonary (n, %) | 6 (1.6%) | 12 (3.1%) | 23 (4.2%) | 13 (2.2%) | 29 (4.4%) | 26 (3.8%) |
| Rheumatology (n, %) | 11 (2.9%) | 5 (1.3%) | 9 (1.7%) | 8 (1.4%) | 12 (1.8%) | 6 (0.9%) |

*Statistical significance of overall trend estimated using clustered logistic models using a linear variable indexed to year of publication.

Advertisements were assigned to the "hospitalist" category if it was advertised with that descriptor in the title or body of the advertisement; a similar approach was used for the "primary care" advertisements. Advertisements that solicited for "Internal Medicine" but that were otherwise unspecified in terms of hospital or primary care focus were included in the "Internal Medicine" category.

CI, confidence interval; total number of positions = 4,992, percentages may not total 100% due to rounding.

ty corresponded to the section in which the advertisement was listed.

Advertisements that stated 1 position was available for a number of different specialties (e.g., "One position available for an interventional or non-interventional cardiologist") were considered an advertisement for 1 position in the less-specialized specialty (in this case, noninterventional cardiology). In another common scenario "Internal Medicine physician wanted to join a group of 5 gastroenterologists" was captured as 1 Internal Medicine position and not 1 gastroenterology position. However, if the advertisement listed multiple specialties but did not specify that only 1 position was available (e.g., "seeking cardiologist, gastroenterologist or internal medicine physicians"), we counted each specialty listed as individual potential positions (3 in this case).

Unless "Primary Care" positions specified they were seeking family practice-trained personnel or specified "primary care" in their description, we assumed these positions were soliciting internal medicine-trained physicians. Advertisements for hospitalists were identified when the term "hospitalist" was used in the advertisement body or title. We excluded advertisements for locum tenens, night-time coverage physicians ("house doctors"), and military or graduate training positions.

Abstraction Quality Assurance

The investigative team performed 20 abstractions together in order to ensure uniform interpretation. After this initial training, investigators cross checked a random subset of 5% of advertisements in order to increase data reliability. In the rare circumstances where an advertisement was difficult to understand or assess, consensus was reached among the abstractors.

Statistical Analysis

We first characterized the advertisements in our sample according to numbers of positions listed, location, group size and

type, academic affiliation, and journal. For each specialty, a generalized linear model for binary outcomes with year of publication as a continuous predictor was used to assess trends in the probability that an advertisement was for a position in the given specialty. These models used the log rather than the logit link conventionally used in logistic models, thus providing estimates of the relative risk rather than the relative odds for each additional calendar year. This allowed us to characterize time trends as the year-over-year relative or percent change in the proportions of all advertisements in each specialty, calculated as the estimated relative risk minus 1, times 100. We also fit analogous models in which calendar year was grouped into 3-year periods and treated as a categorical variable, providing estimates of the percent increase in proportions for each specialty from one 3-year period to the next. All estimates were obtained using generalized estimating equations (SAS PROC GENMOD with repeated statement) to account for potential clustering of this outcome by journal. All analyses were performed using SAS 9.1 for Windows (Cary, NC).

Initial analyses focused on advertisements in individual specialties. However, to increase statistical power, we aggregated specialty types into 5 categories: outpatient generalists (internal medicine and primary care advertisements), inpatient generalists (hospitalist advertisements), procedural specialists (cardiology, pulmonary, gastroenterology advertisements), nonprocedural specialists (rheumatology, endocrinology, infectious disease advertisements), and critical care (pulmonary critical care or critical care advertisements). Because critical care specialists are defined by both site and subspecialty, we did not combine this category with others.

RESULTS

Characteristics of Advertisements

Abstractors reviewed 4,224 advertisements describing 4,992 job positions (Table 1). Of these positions, jobs in the Northeast (31% of positions) and single specialty groups (36.8% of

Table 2 Continued.

| | 2002 | 2003 | 2004 | Average Relative Annual Change in % of Ads (95% CI) | P for Change* 1996 to 2004 |
|--------------------------------------|-------------|-------------|-------------|--|-------------------------------|
| Cardiology, interventional (n, %) | 51 (8.8%) | 48 (8.9%) | 48 (7.5%) | 1.2% (−2.4, 4.9) | .53 |
| Cardiology, noninterventional (n, %) | 93 (16.0%) | 85 (15.8%) | 89 (13.8%) | −0.2% (−2.7%, 2.4%) | .90 |
| Critical care (n, %) | 17 (2.9%) | 15 (2.8%) | 11 (1.7%) | 10.2% (3.1%, 17.8%) | .0045 |
| Endocrine (n, %) | 14 (2.4%) | 19 (3.5%) | 15 (2.3%) | 2.3% (−4.9%, 10.0%) | .54 |
| Gastroenterology (n, %) | 57 (9.8%) | 46 (8.6%) | 39 (6.1%) | 2.8% (−0.6%, 6.4%) | .11 |
| Geriatrics (n, %) | 5 (0.9%) | 4 (0.7%) | 7 (1.1%) | −9.7% (−20.0%, 1.8%) | .096 |
| Hematology oncology (n, %) | 19 (3.3%) | 24 (4.5%) | 36 (5.6%) | 4.8% (−0.9%, 10.8%) | .10 |
| Hospitalist (n, %) | 47 (8.1%) | 57 (10.6%) | 78 (12.1%) | 20.5% (15.2%, 26.1%) | <.001 |
| Infectious disease (n, %) | 18 (3.1%) | 16 (3.0%) | 27 (4.2%) | 1.0% (−5.3%, 7.6%) | .77 |
| Internal Medicine (n, %) | 192 (33.0%) | 158 (29.4%) | 214 (33.3%) | −0.1% (−1.7%, 1.6%) | .90 |
| Nephrology (n, %) | 24 (4.1%) | 22 (4.1%) | 25 (3.9%) | −10.2% (−14.8%, −5.4%) | <.0001 |
| Primary care (n, %) | 18 (3.1%) | 9 (1.7%) | 28 (4.4%) | −1.9% (−7.9%, 4.6%) | .56 |
| Pulmonary (n, %) | 22 (3.8%) | 24 (4.5%) | 18 (2.8%) | 4.4% (−1.2%, 10.4%) | .34 |
| Rheumatology (n, %) | 5 (0.9%) | 11 (2.0%) | 8 (1.2%) | −5.1% (−14.8%, 5.7%) | .34 |

positions) were the most common. The majority of them were posted in the *New England Journal of Medicine* (64.1%). Although the total number of advertisements increased substantially over time, this trend was uniform across all journals reviewed.

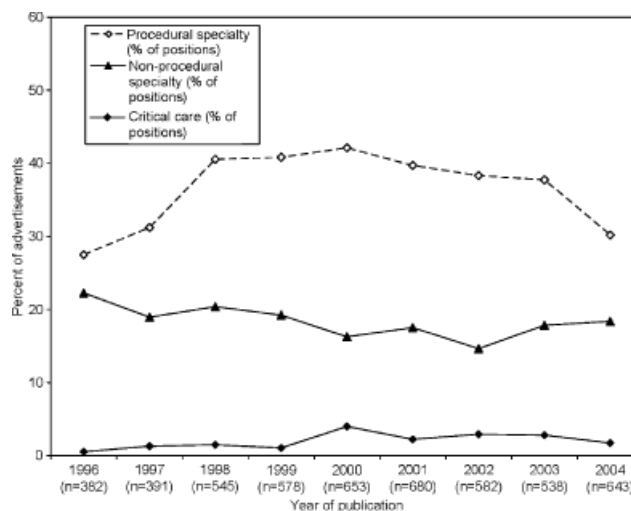
Trends in Individual Specialties 1996 to 2004

In analyses of disaggregated specialty data, the relative proportion of advertisements for nephrologists declined 10.1% annually (95% confidence interval [95% CI] -14.8% , -5.4%) (Table 2). We also observed a moderate but statistically significant increase in the proportion of advertisements for critical care specialists (relative annual change 10.2%, 95% CI 3.1%, 17.8%). The proportion of advertisements for hospitalist positions increased strikingly over this time period (relative annual increase 20.5%, 95% CI 15.2%, 26.1%). There were no statistically significant trends in other individual specialties between 1996 and 2004.

Trends in Subspecialty and General Medicine Advertisements

In order to increase our power to determine relative marketplace demand based on hospital versus outpatient practice site, and procedural nature of the practice, we then aggregated specialties according to the criteria in Figures 1 and 2 and performed analyses examining overall trends, as well as trends according to discrete time periods suggested after inspection of disaggregated data.

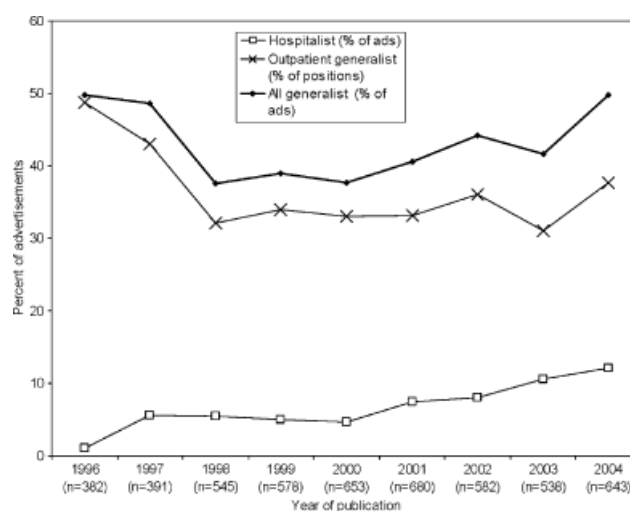
Relative to 1996 to 1998, advertisements for procedural specialties increased in 1999 to 2001, but then declined in 2002 to 2004; nonprocedural specialties declined early (1996 to 1998 vs 1999 to 2001), but then plateaued. A relative increase in critical care advertisements was statistically significant only when 1999 to 2001 was compared with 1996 to 1998. Later (1999 to 2001 vs 2002 to 2004) changes were not significant. There was no change in the annual relative proportion of ads in procedural or nonprocedural specialties (both $P < .05$), but the relative annual increase in the



Relative changes in internal medicine specialty advertisements

| | Relative change | | Relative annual change |
|----------------|---|--|---|
| | 1999 to 2001 vs. 1996 to 1998 | 2002 to 2004 vs. 1999 to 2001 | 1996 to 2004 |
| Procedural | 20.2% (95% CI 8.9% to 32.8%) | -14.0% (95% CI -5.9% to -21.3%) | 0.2% relative annual change, (95% CI -1.4% to 1.8%) |
| Non-procedural | -14.2% (95% CI -25.8% to -0.8%) | -3.5% (95% CI -16.4% to 11.3%) | -0.5% relative annual change (95% CI -4.4% to 3.6%) |
| Critical Care | 114.3% (95% CI 20.5% to 282.0%) | -0.8% (95% CI -33.4% to 47.8%) | 10.2% relative annual change (3.1%, 17.8%) |

FIGURE 1. Trends in internal medicine specialty advertisements published between 1996 and 2004, aggregated by procedural (e.g., cardiology, gastroenterology, pulmonary), or nonprocedural (geriatrics, nephrology, rheumatology, hematology, infectious disease) nature of the practice. Critical care is reported separately. Relative to 1996 to 1998, ads for procedural specialties increased in 1999 to 2001, but then declined in 2002 to 2004. Nonprocedural specialties declined early (1996 to 1998 vs 1999 to 2001), but were stable afterward. For discrete time periods, relative changes in critical care advertisements were statistically significant only when 1999 to 2001 was compared with 1996 to 1998. Tests for trends in relative annual changes in advertisements over the entire time period in procedural and nonprocedural specialties are both statistically nonsignificant, while those for critical care are statistically significant ($P = .004$).



Relative changes in general internal medicine specialty advertisements

| | Relative change | | Relative annual change |
|-----------------------|------------------------------------|------------------------------------|---|
| | 1999 to 2001 vs. 1996 to 1998 | 2002 to 2004 vs. 1999 to 2001 | 1996 to 2004 |
| Hospitalist | 143.0% (95% CI 82.0% to 224.3%) | 79.3% (95% CI 56.4% to 124.0%) | 20.5% relative annual change (15.2%, 26.1%) |
| Outpatient generalist | -17.0% (95% CI -24.2% to -9.0%) | 6.4% (95% CI -3.6% to 15.1%) | -2.7% relative annual change (95%CI -4.1%, -1.2%) |
| All generalist | -12.0% (95% CI -19.2 to -5.0%) | 16.2.0% (95% CI 16.2% to 26.0%) | 0.5% relative annual change, (95%CI -0.8% to 2.0%) |

FIGURE 2. Trends in general internal medicine advertisements published between 1996 and 2004, aggregated by site of practice. Early relative increase (1999 to 2001 vs 1996 to 1998) in hospitalist advertisements did not reach tests of statistical significance, but later changes were markedly significant; the reverse trend was observed in outpatient-based generalist advertisements. Hospitalists showed a statistically significant increase over time ($P < .0001$), while outpatient generalist positions (i.e., Primary care and Internal Medicine) declined over this same time period ($P = .001$). However, the combined proportion of generalist advertisements (hospitalists and outpatient-based generalists) did not change between 1996 and 2004 ($P = .4573$).

proportion of advertisements in critical care met tests of significance.

The early relative increase (1999 to 2001 vs 1996 to 1998) in hospitalist advertisements did not reach tests of statistical significance, but later changes were markedly significant; the reverse trend was observed in outpatient-based generalist advertisements with an early decline, followed by a nonsignificant change in later time-period comparisons. Hospitalist advertisements increased significantly ($P < .0001$), while outpatient generalist positions (i.e., Primary Care and Internal Medicine) declined over this same time period ($P = .001$). However, the combined proportion of generalist advertisements (hospitalists and outpatient-based generalists) did not change between 1996 and 2004 (0.5% relative annual change, 95% CI -0.8% to 2.0%).

Secondary Analyses

In secondary analyses (not presented), there were no statistically significant trends between 1996 and 2004 in the proportion of advertisements by region, academic affiliation, or practice type (e.g., multispecialty), or in the limited amount

of salary data that was available. Similar analyses of trends according to position type within generalist subset of data were noninformative due to small sample sizes and because we imposed stricter tests of significance ($P < .01$) to guard against the threat of multiple comparisons in these analyses. Analyses within specific specialties were similarly noninformative due to small sample sizes within individual years.

DISCUSSION

Our review of medical advertisements published between 1996 and 2004 suggests that the relative proportion of advertisements across the internal medicine subspecialties has changed little. However, the proportion of advertisements soliciting hospital-based physicians (e.g., critical care and hospitalists) has increased, while those seeking outpatient-based generalists have declined. Overall demand for generalists was unchanged, as the decline in advertisements for outpatient generalists was offset by the increase in that for hospitalist advertisements.

Demand for physicians with particular skills can be estimated using several methods, each of which has limitations.

Methods based on consensus opinion, disease prevalence, benchmark data from national organizations, and population trends, while seeking to project the gap between the need for services and services available, may not reflect current demand.^{23–27} Assessments of recruitment advertisements mirror indices used for the general workforce^{28,29} to estimate current demand—a factor of most immediate interest to training programs and their graduates.^{28–30} However, measuring advertisements in journals only evaluates entry into the workforce (and not exits).

A decade ago, Seifer et al.¹⁹ also analyzed demand for physicians using advertisements, and recommended repeat studies as a timely and accurate way to determine marketplace trends. Since then, others have examined trends in neurosurgery^{21,22} and diagnostic radiology.^{30,31} A recent study suggested that the ratio of specialists to generalists was stable between 1993 and 1999, but did not report advertisements for hospitalists or trends within specialties.²⁰

While demand for most subspecialty physicians did not change, demand for nephrologists declined slightly, a trend noted elsewhere.³² This finding stands in contrast to workforce projections suggesting that the need for nephrologists will increase as the number of patients needing dialysis increases.³³ Between 1993 and 1997, the number of nephrologists grew faster than the physician population as a whole,³⁴ but recent trends may be an artifact of the reimbursement system³² or may reflect recalibration of the marketplace after earlier expansion.³⁵

A shortage in critical care-trained physicians has also been projected¹³; projections of a critical care shortage have coincided with evidence reports^{14,15} and initiatives supporting intensivists models.^{16–18} These factors may have produced the slight relative increase in demand for intensivists that we observed over the entire time period. However, this overall increase was primarily due to an increase in advertisements seen only in the first few years of our study, while later years demonstrated little growth. Whether this trend will persist and its implication in terms of a potential critical care shortage is unclear from our results.

Not surprisingly, we observed a marked upward trend in the relative demand for hospitalists. The term “hospitalist” first appeared in 1996,¹² with workforce estimates published soon thereafter suggesting that the eventual number of hospitalists might near 20,000.²⁶ While some of the increase might be due to “case finding” of existing hospitalists or increasing use of the term, the magnitude of the increase that we observed is much more likely due to rising demand for hospitalists. Indeed, previous work suggests that the majority of hospitalists have been in practice fewer than 5 years.^{11,36} There are few direct measures of the number of hospitalists currently practicing in the U.S. Membership in the Society of Hospital Medicine (SHM), the national professional organization for hospitalists, has increased from fewer than 500 in 1998 to more than 5,000 in 2005, and SHM estimates the overall number to be even higher.³⁷ As other inpatient care changes arise (such as the need to substitute attending physicians for residents in the face of duty-hour reductions³⁸), hospitals may require a hospitalist workforce exceeding initial estimates.²⁶

Relationships between the hospitalist and primary care workforces may also play a role in our results. For example, hospitalists may permit outpatient-based practitioners to cov-

er an increased outpatient volume with greater efficiency by assuming inpatient work that would otherwise displace clinic time. This hypothetical relationship¹² would permit demand for outpatient physicians to remain flat or fall even if the actual need was unchanged or increased.

The vast majority of hospitalists, like primary care physicians, have no additional board certifications or fellowship training beyond internal medicine residency. Thus, based on the snapshot provided by our results, the number of internal medicine residency training positions should remain constant over the near term. However, as the physician marketplace continues to differentiate between these 2 practice types, differentiation of residency training into outpatient or inpatient focused tracks may be reasonable.³⁹

Our study has several limitations. Although using methods similar to previous authors' increases our work's comparability, it may not reflect newer methods for posting job advertisements (e.g., internet advertisements) that became popular in the last few years of our study. Because we looked at relative workforce demand, the risk of this bias should be small unless some specialties disproportionately chose non-print advertisement venues, or preferentially posted listings in specialty-focused journals. We are unaware of any data suggesting such a shift has occurred, and we are unable to test for these trends in electronic advertisements removed from the internet. Because we depended on published advertisements, our measures of demand are in part determined by the advertising space available in the journals we targeted. To address this concern, we calculated our trends based on the relative proportions of advertisements in each specialty, as in previous work.^{19,21,31} Interobserver variability and ascertainment bias in interpretation of advertisements are other potential shortcomings of our study. However, we used a simple and reproducible data collection tool and carried out regular audits of data in order to assure data quality. Our methods for interpreting advertisements that solicited for a single position but listed several possibilities may have biased our findings toward identifying less-specialized positions more often, but we noted no change in subspecialty demand overall, and observed a decline in outpatient generalist advertisements.

Our review of medical advertisements suggests that between 1996 and 2004, demand for most subspecialties remained stable, while demand for outpatient generalists decreased modestly. Over the same time, demand for inpatient-based physicians critical care and hospitalist physicians increased markedly. While we cannot causally connect the observed relative decline in demand for outpatient generalists with a relative increase in demand for hospitalists, our observation of no net change in relative overall demand for generalists suggests that, barring new changes in the marketplace for physicians, aggregate demand for generalist-trained physicians will not change at least in the short term. Whether or not general internal medicine training should begin to differentiate into inpatient and outpatient-based training tracks (and certifications) as a result of differing marketplace demands will need to be a subject of future study and debate.

The authors would like to thank Dr. Eric Vittinghoff for expert statistical advice.

Funding: Dr. Auerbach is supported by a K08 research and training grant (K08 HS11416-02) from the Agency for Healthcare Research and Quality.

Disclosures: None.

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