Productivity, Quality, and Patient Satisfaction

Comparison of Part-time and Full-time Primary Care Physicians

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CONTEXT: Although few data are available, many believe that part-time primary care physicians (PCPs) are less productive and provide lower quality care than full-time PCPs. Some insurers exclude part-time PCPs from their provider networks.

OBJECTIVE: To compare productivity, quality of preventive care, patient satisfaction, and risk-adjusted resource utilization of part-time and full-time PCPs.

DESIGN: Retrospective cohort study.

SETTING: Boston.

PARTICIPANTS: PCPs affiliated with 2 academic outpatient primary care networks.

MEASUREMENTS: PCP productivity, patient satisfaction, resource utilization, and compliance with screening guidelines.

RESULTS: Part-time PCP productivity was greater than that of full-time PCPs (2.1 work relative value units (RVUs)/bookable clinical hour versus 1.3 work RVUs/bookable clinical hour, $P < .01$). A similar proportion of part-time PCPs (80%) and full-time PCPs (75%) met targets for mammography, Pap smears, and cholesterol screening ($P = .67$). After adjusting for clinical case mix, practice location, gender, board certification status, and years in practice, resource utilization of part-time PCPs (\$138 [95% confidence interval (CI), \$108 to \$167]) was similar to that of full-time PCPs (\$139 [95% CI, \$108 to \$170], $P = .92$). Patient satisfaction was similar for part-time and full-time PCPs.

CONCLUSIONS: In these academic primary care practices, rates of patient satisfaction, compliance with screening guidelines, and resource utilization were similar for part-time PCPs compared to full-time PCPs. Productivity per clinical hour was markedly higher for part-time PCPs. Despite study limitations, these data suggest that academic part-time PCPs are at least as efficient as full-time PCPs and that the quality of their work is similar.

KEY WORDS: productivity; quality of care; patient satisfaction; part-time physicians; women in medicine.

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Within academic settings, many primary care physicians (PCPs) practice clinical medicine part time.^{1,2} Part-time clinical positions are attractive to two general populations of physicians: those wishing to pursue other academic interests such as research and those desiring to balance a career in medicine with family or other outside interests, many of whom are women.^{3,4} Primary care internists pursuing academic interests in addition to clinical medicine will often devote a majority of their work effort (up to 80%) to research or teaching.⁵ However, many believe that part-time PCPs are less efficient clinicians than their full-time colleagues and provide a lower degree of access and continuity for patients.^{6,7} Citing the benefits of provider continuity, several health insurers in our region, such as Massachusetts' Managed Medicaid program (A. Hanson, MD, personal communication), Blue Cross Blue Shield of Massachusetts,⁸ and Neighborhood Health Plan of Rhode Island⁹ exclude some part-time PCPs from their networks. On the basis of similar assumptions, some academic medical centers also discourage part-time clinical activity through financial and other incentive systems.

Although there are few data comparing part-time and full-time PCPs, greater clinical volume does appear to be correlated with higher quality in many areas in medicine. When compared to generalists, specialists appear to achieve better clinical outcomes in the management of myocardial infarction,¹⁰ stroke,¹¹ asthma,¹² and rheumatoid arthritis.¹³ Beyond differences in training, some of this differential may be because specialists see a higher volume of patients with these selected conditions. However, differences between specialists and PCPs were not apparent in studies comparing specialists' and generalists' outcomes in the management of common conditions such as low back pain,¹⁴ hypertension or non-insulin-dependent diabetes mellitus.¹⁵ These findings could be explained by a "threshold" in the relationship between quality and volume beyond which a high level of quality is maintained, but below which quality of care may suffer.

In one of the few studies to compare part-time and full-time PCPs, Columbia-Presbyterian Medical Center in New York evaluated the effect on outcomes when several PCPs requested to work part time.¹⁶ Although underpowered due to small numbers, this study demonstrated little or no difference in patient satisfaction, hospital length of stay, and other inpatient quality and resource utilization measures when comparing three part-time and five full-time providers.

Because practicing clinical medicine part time is a critical component for many academic general internists, we tested the assumption that only full-time clinicians

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provide cost-effective, high-quality care to patients. In this study, we compared quality of preventive care, patient satisfaction, clinical productivity, and managed care financial performance among part-time and full-time PCPs within academic primary care practices affiliated with one medical school.

METHODS

This study was performed at Brigham and Women's Hospital (BWH) and Massachusetts General Hospital (MGH). Both institutions are teaching hospitals affiliated with Harvard Medical School in Boston, Mass, and both have hospital-based primary care practices as well as practice locations in the surrounding community. All PCPs practicing at BWH-affiliated practices have the same salary scale and use a common computing system containing a computerized medical record, the Brigham Integrated Computer System which is an internally developed electronic medical record system.¹⁷ At the time of this study, PCPs at both MGH and BWH had limited financial risk based on performance in managed care contracts. Not all data were available for both hospitals; some analyses were performed using data from BWH only.

Quality, Patient Satisfaction, and Productivity Data

Quality of preventive care, patient satisfaction, and productivity data were obtained from administrative databases for each of the PCPs associated with BWH in 1998 (comparable data were not available from MGH). Productivity (work units/scheduled [bookable] clinical hour) was measured as work relative value units (RVUs)¹⁸ generated from ambulatory clinical activity during FY 1998 divided by the number of bookable clinical hours per week for each PCP.

Patient satisfaction was assessed using an internally developed ambulatory patient satisfaction instrument

based on a questionnaire used in the Medical Outcomes Study.¹⁹ To determine patient satisfaction with their PCP, patients were asked to rate "the overall care you received from your physician/provider." We calculated the percent of patients rating their PCP as "very good" or "excellent" on a five-point scale ranging from "Excellent" to "Poor." Ratings were based on a minimum of 20 responses for each PCP.

Quality of preventive care was measured by determining PCP compliance with screening goals for Pap smear, mammography, and cholesterol measurement adopted by BWH as disease prevention benchmarks. To meet the Pap smear screening goal, $\geq 70\%$ of women ages 21 to 64 years must have had a Pap smear within the past three years. To meet the mammography screening goal, $\geq 70\%$ of all women between the ages of 52 and 64 years must have had a mammogram within the last two years. To meet the cholesterol screening goal, 70% of all patients between the ages of 40 and 64 years must have had a cholesterol measurement within the last three years. Using the electronic medical record at BWH, quality performance was measured for a PCP's entire patient panel. Only PCPs meeting all 3 quality goals were considered compliant in our analyses.

Resource Utilization Data

Resource utilization analyses were based on 2 years of claims data for patients in one commercial global capitation HMO health plan (Table 1). BWH and MGH PCPs practicing in both 1996 and 1997 were included in the analyses.

Claims data were adjusted using the Johns Hopkins Ambulatory Care Group (ACG) Case-Mix Adjustment System version 4.1 designed to predict health care resource consumption for populations.²⁰ Using claims data, the ACG system assigns an average "weight" to a PCP's

Table 1. Characteristics of Full-time and Part-time Primary Care Physicians* and Their Patients

Characteristic	Part-time† (N = 69)	Full-time‡ (N = 63)	P Value§
Physician characteristics			
Women, n (%)	42 (61)	19 (30)	<.01
Board certified, n (%)	65 (94)	63 (100)	.05
On-campus, n (%)	50 (72)	32 (51)	.01
Mean hours of clinical work (95% CI)	11.2 (9.9 to 12.6)	27.6 (26.1 to 28.9)	<.01
Mean years in practice (95% CI)	11.9 (9.2 to 14.6)	13.9 (11.1 to 16.4)	.25
Patient characteristics			
Mean number of patients in PCP panel (95% CI)	222 (165.3 to 279.5)	422 (362.5 to 481.9)	<.01
Female patients, n (%)	10,616 (69)	15,182 (57)	.01
Mean age of patients (95% CI)	39 (37.8 to 40.2)	39.4 (38.2 to 40.7)	.56
Mean ACG weight (95% CI)	0.9904 (0.9156 to 1.065)	1.0163 (.038 to 1.094)	.59
Mean health care expense, \$PMPM (95% CI)	\$135.66 (\$119.16 to \$152.16)	\$137.77 (\$120.50 to \$155.05)	.84

* PCPs from Brigham and Women's Hospital and Massachusetts General Hospital practicing during 1996 and 1997.

† Part-time, <20 hours per week.

‡ Full-time, ≥ 20 hours per week.

§ P value based on χ^2 test for categorical variables and t test for continuous variables.

On-campus, practice on hospital campus; CI, confidence interval; PCP, primary care physician; ACG, ambulatory care group; \$PMPM, expense per member per month.

panel based on patients' age, gender, and diagnosis using the 9th International Classification of Diseases (ICD-9) system.

Analysis

On the basis of clinical experience and the distribution of clinical effort among our study population, PCPs were defined as either part-time (<20 bookable hours per week in ambulatory clinical practice) or full-time (≥ 20 clinical hours per week). This definition is consistent with the Medical Group Management Association's position that part-time physicians are those spending $\sim 50\%$ of their effort on nonclinical activities.²¹

Comparison of resource utilization between part-time and full-time PCPs was performed using generalized linear models adjusting for PCP age, gender, years in practice, board certification, hospital affiliation, practice location (on-campus or community setting) and severity of illness in a PCP's panel using the ACG Case-Mix Adjustment System. Using generalized estimating equations (GEEs), we tested for a possible clustering effect²² of patients receiving care at the same practice site. Because this analysis did not change the result of our regression analyses, we have reported outcomes of analyses that do not use the GEE model. Univariate analyses were performed using the χ^2 test for dichotomous outcomes (e.g., patient satisfaction and quality data) and the *t* test for continuous variables (e.g., productivity). PCPs were the unit of analysis for all analyses. All *P* values were 2-tailed. Statistical analyses were performed using SAS (SAS Institute, Inc., Cary, North Carolina).

RESULTS

Of the 270 Internal Medicine PCPs in our network (both BWH and MGH), 164 (61%) met the study criteria of having >100 member months per year in our capitated managed care plan and being associated with our network throughout both 1996 and 1997. After excluding 31 PCPs because of incomplete data, and 1 PCP because of a change from full-time to part-time status during the study period, 132 (80%) of the 164 PCPs meeting study criteria were included in this analysis.

Of these 132 PCPs, 69 (52%) were part-time. Part-time PCPs were more likely to be women and to practice "on-campus" than their full-time colleagues. Years in practice, average age, and case mix (as measured by the mean ACG weight) did not differ between part-time and full-time clinicians (Table 1). Most of the 69 part-time PCPs in our study practiced clinical medicine part time but were employed full time. Of 21 part-time PCPs at BWH, 19 (90%) performed other nonclinical responsibilities such as research, teaching, or administrative duties within the medical center. At MGH, this number was similar: 41 of 48 (85%) worked full time within the medical center but were part-time clinicians.

Resource Utilization

Total unadjusted health care utilization measured over a two year period (1996–1997) did not differ between part-time [\$136 [95% confidence interval (CI), \$119 to \$152]] per member per month) and full-time [\$138 [95% CI, \$121 to \$155] per member per month) PCPs (*P* = .84). After adjustment for the ACG weight of a PCP's panel, and PCP practice location, gender, board certification status, and years in practice, the resource utilization of part-time PCPs [\$138 [95% CI, \$108 to \$167]] remained similar to that of full-time PCPs [\$139 [95% CI, \$108 to \$170]] (*P* = .92) (Figure 1).

Quality, Productivity, and Patient Satisfaction

Because similar data were not available for MGH PCPs, this analysis was performed for BWH PCPs only. Of 57 BWH PCPs employed by BWH in 1998, 25 (45%) were full-time and 32 (55%) were part-time. Data on quality of disease prevention care were available for 56 (98%), productivity data for 55 (96%), and patient satisfaction data for 47 (82%). The percentage of PCPs who were compliant with mammography, Pap smear, and cholesterol screening guidelines did not differ significantly between part-time (80%) and full-time (75%) PCPs (*P* = .67). Patient satisfaction was also similar among patients of part-time and full-time PCPs (Table 2).

After adjustment for the number of bookable clinical hours, part-time PCP productivity (2.1 work RVUs/hour) was substantially greater than that of full-time PCPs (1.3 work RVUs/hour), (*P* < .01), (Table 2). In a cluster analysis, a variable grouping PCPs who practice together in the same office location was not predictive of any outcome.

DISCUSSION

Practicing medicine part time is critically important to many academic general internists who blend clinical care with teaching, research, or administrative roles. However, on the basis of the widely held assumption that part-time PCPs provide an inferior level of care when compared to their full-time colleagues, some part-time PCPs are being excluded from primary care networks. This is of concern because there are few data to support a bias against part-time PCPs. In this study, we evaluated the quality of preventive care, productivity, patient satisfaction, and case mix-adjusted resource utilization of part-time and full-time PCPs within one academic health care system.

Patient satisfaction, risk-adjusted resource utilization, and quality of preventive care did not differ between part-time and full-time PCPs. After adjustment for bookable clinical hours, productivity in work RVUs was 62% greater for part-time PCPs than for their full-time colleagues. In part, this may occur because part-time PCPs can maintain a fast pace over a short period that would be unsustainable for a full-time PCP. Patient encounters in addition to those during routine bookable office hours may also explain some

FIGURE 1. Adjusted mean expenses per member per month (\$PMPM) adjusted for Ambulatory Care Group (ACG) weight, practice location, physician board status, gender and years in practice. Part-time versus full-time primary care physicians (PCPs) from Brigham and Women's Hospital and Massachusetts General Hospital practicing during 1996 and 1997.

of the differential between part-time and full-time PCPs. Prior research has found part-time professionals to be more productive because they often work more hours than they are paid for, thus increasing the productivity of the group.²³ As outlined by Wheeler et al.,²⁴ there are additional benefits to having part-time physicians on staff. Part-time physicians add to the accumulated wisdom of a practice, provide additional flexibility in scheduling, and expand weekend call groups. By advertising the availability of part-time positions, a practice also attracts a larger pool of applicants, including those physicians—especially women—desiring part-time clinical work. Furthermore, many part-time physicians have administrative, research, or teaching duties, and may be more effective in these roles if they remain clinically active, although such benefits are difficult to quantify. Academic part-time physicians may

also contribute to their practices by bringing expertise in specific areas of medicine.

Further study is needed to determine if these differences exist among nonacademic PCPs, and to what degree productivity and patient satisfaction are related to the availability of part-time PCPs outside of their usual office hours. Although routine access to part-time PCPs is limited because of restricted bookable clinical hours, our findings of high patient satisfaction and comparable resource utilization rates among patients of part-time PCPs suggests that part-time PCPs have developed successful alternative strategies to accommodate patients outside of their routine bookable clinical hours.

Overhead expenses were not factored into our analyses. However, office rental, phone systems, and staff support will not necessarily be higher if two or more

Table 2. Primary Care Physician (PCP) Productivity and Quality: Comparison of Part-time and Full-time Physicians*

Measure	Part-time [†]	Full-time [‡]	P Value [§]
PCPs meeting BWH quality benchmark , % (95% CI)	80 (77 to 84)	75 (72 to 79)	.04
Mean patient satisfaction score [¶] , % (95% CI)	95 (912 to 98)	92 (89 to 92)	.13
Productivity, work RVUs per hour [#] (95% CI)	2.1 (1.8 to 2.3)	1.3 (1.1 to 1.6)	<.01

* Brigham and Women's Hospital PCPs practicing in 1998.

[†] Part time, <20 hours per week.

[‡] Full time, ≥20 hours per week.

[§] P value based on χ^2 for categorical variables and t test for continuous variables.

^{||} Quality benchmark, 70% of a PCP's panel had appropriate screenings for PAP smear, cholesterol and mammography.

[¶] Patient satisfaction, % of patients surveyed rating the PCP "excellent" or "very good."

[#] Productivity, work relative value units (RVU) in FY 98 divided by bookable clinic hours per year (RVU/bookable clinical hour).

BWH, Brigham and Women's Hospital; CI, confidence interval.

part-time physicians share a practice load equivalent to a full-time PCP. For example, in our institutions, malpractice premiums are paid on the basis of the number of patient encounters to the institution, not on the number of doctors practicing. Thus, malpractice overhead expenses may not necessarily be lower if an institution employs only full-time PCPs. Attempts to calculate overhead expenses should acknowledge the cross-subsidization occurring when non-clinical support staff of part-time PCPs perform clinical functions (e.g., calling in prescription refills) that could make part-time PCPs appear less costly.

This study has several limitations. Our study was retrospective and utilized administrative data. Although data were missing for some analyses, the data collection process was blind to the part-time/full-time status of PCPs. Conducted at two academic institutions within one integrated delivery system, these results may not be generalizable to other institutions or settings. Nonacademic part-time PCPs will likely differ from our part-time PCPs, most of whom practiced clinical medicine part time but had additional roles at our medical centers. In addition, the only systematically collected quality measures available to us were related to compliance with disease prevention guidelines (e.g., Pap smear rates). These measures are coarse and do not fully represent quality. Nevertheless, these metrics are the current standard for preventive care quality.

These findings from an academic healthcare system contradict the prior dogma that part-time PCPs provide lower quality care and are less efficient than full-time PCPs, and thus should be excluded from health plan physician networks or discouraged from practicing at all. Although confirmatory studies are required from other settings, particularly from nonacademic practice settings, our study supports greater acceptance of academic part-time PCPs within health plans and academic primary care practices alike.

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