

Benchmarking the Costs of Residency Training in Family Practice

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Financial and operational benchmarking data for family practice residency programs within the University of Washington Network were established for the year 2000. Data were systematically collected by standardized questionnaire, evaluated for quality and verified, and then analyzed. Revenues, expenses, faculty structures, productivity, and family practice center staffing models are reported, using program averages and ranges or standard deviations for individual data elements. Variations and data problems included data line definitions, difficulties obtaining data from sponsoring institutions, indirect program costs, and widely differing program structures. Limited conclusions can be made regarding "best practices," but the results contribute to the establishment of normative data for budgeting and operational evaluation of family practice programs.

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The number of family practice residencies grew rapidly during the mid-1990s in response to the emerging need for redistribution of the physician workforce. At the time, financial payments for physician professional services through graduate medical education (GME) payments by Medicare, and Medicaid in some states, were favorable for the expansion of primary care residency training. However, as the health care reform movement stalled and professional payments stagnated, institutions began to rethink their commitment to residency training.

The training expenses for an outpatient-based residency are greater than for an inpatient-intensive residency, due to the increased costs associated with the office-based family practice center (FPC) staff, faculty, and facilities.¹ Costs to institutions will rise because the Balanced Budget Act of 1997 will decrease Medicare GME payments by 20%–25% for teaching institutions in 2003. Moreover, Medicare, Medicaid, and other private insurance payers continue to decrease outpatient physician payments relative to the increasing expenses incurred in running an outpatient prac-

tice. These financial pressures on sponsoring institutions have resulted in intense scrutiny of the operational expenses of residency training programs.

Institutions, directors, and administrators have formulated approaches to "product-line" evaluation of GME programs as a means for evaluating program expenses.^{2,3} Hospital administrators have relied on national data, such as those from the Medical Group Management Association (MGMA) or the American Medical Group Association, and regional correspondence (eg, discussion forums) in an attempt to correlate the variations in financial performance between a mix of residency programs and for-profit medical groups, with limited success. Family practice programs currently have only the limited competing data on the budgets and operations of residency programs that have been published to date,⁴ and many programs have been hesitant to share their data.

As a network of 15 diverse but closely affiliated programs, the University of Washington Family Practice Residency Network (UWFPRN) is in a unique position to study the variables of residency finances and operations. This paper summarizes the results of a data set developed by the Network to examine the revenues, expenses, productivity, and financial operations of its member programs, with the intent of providing the programs with tools to better respond to individual institutional inquiries, report on similarities in financial struc-

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ture, and benchmark key indicators for identifying “best practices.”

Methods

UWFPRN consists of 15 programs in the Pacific Northwest, operated independently but connected through affiliation with the University of Washington. The 14 participating programs included in this study (we excluded the sole military program) vary in size, number of sponsoring institutions, configuration, geography, degree of urbanization, and presence of satellites or rural training tracks (RTTs) separate from the core program (Table 1).

Instrument

A questionnaire was developed during a 2-year process involving directors and program administrators. A preliminary questionnaire was completed by all programs. Initial results were tabulated and revealed many inconsistencies in definitions and interpretations. A day-long conference of administrators and directors was convened to clarify definitions and focus of the project. Based on this session, an Internet-based questionnaire was developed for completion by all sites. This revised questionnaire included definitions and clarifications to facilitate answering questions, but few programs successfully completed this version of the questionnaire.

The final successful strategy was a simplified data collection questionnaire using an Excel spreadsheet format. Questionnaire content was similar to previously published models of financial analysis,⁵ though it did not include information on “intangible” benefits (Table 2).

Survey Methods

The questionnaire was e-mailed in March 2001 to all program directors and/or their program administrators, requesting detailed information on financial revenues, expenses, and operations for the most recent academic/fiscal year. Following questionnaire completion, an individual interview was conducted by the principal investigator with each program representative to clarify data discrepancies and understand variations in program structure and operations important to inter-program comparisons. All 14 Net-

work civilian programs participated fully in responding to the questionnaire and the subsequent interview.

Data Coding and Analysis

Seven of 14 Network programs have structures complicated by the presence of satellite clinics or RTT sites (Table 1). The residents and clinical operations at these sites have variable interactions with the main program. Because these sites are administratively and financially separate from the main sites, our analysis accounted for the revenues and expenses attributable to these residents at the main program site only. Data on the satellites and RTT sites themselves were not available for analysis.

The total average expense per resident, the most difficult data to obtain from programs, was calculated using two methodologies to verify accuracy. The first averaged data of all the programs, excluding charges back to programs for corporate allocations, and made no attempt to estimate any indirect costs. The second separately averaged individual expense items only for those programs that actually incurred them, including items that were commonly “indirects,” then totaled all of these expenses.

Staffing of the FPCs was compared using several methods for accounting for the number of providers in clinic. “Actual providers” tabulated the number of residents, faculty, and other providers working in the clinic; totals were less than total program numbers because faculty and residents working at satellite clinics and rural training track sites were excluded. “Volume provider”

Table 1

University of Washington Family Practice Residency Network Program Structures

State	Area Population Size	Year of Inception	Setting/(# of Sponsoring Institutions)	Total Residents/ (Faculty FTE)	Satellite/RTT/ Fellowship
Alaska	260,000	1997	Community (1)	24 (9.1)	—
Idaho	165,000	1975	Community (2)	27 (11.7)	One RTT, fellowship
Idaho	64,000	1992	University (1)	12 (6.5)	—
Montana	200,000	1996	Community (2)	18 (5.5)	One RTT
Washington	1,600,000	1970	University (1)	24 (7.2)	One satellite
Washington	1,600,000	1970	Community (1)	30 (9.5)	Two satellites, fellowship
Washington	1,600,000	1974	Community (1)	30 (7.8)	Two satellites
Washington	1,600,000	1969	Community (1)	15 (8.4)	—
Washington	1,600,000	1986	Community (1)	24 (11.1)	—
Washington	200,000	1979	Community (1)	24 (7.1)	One satellite, fellowship
Washington	250,000	1991	Community (1)	18 (8.6)	—
Washington	360,000	1995	Community (1)	18 (8.4)	—
Washington	60,000	1993	Community (2)	18 (7.8)	—
Washington	185,000	1972	Community (2)	27 (6.9)	Two RTTs, fellowship

FTE—full-time equivalent
RTT—rural training track

Table 2

Questionnaire Topics

Residency Revenue/Year

- Patient care reimbursements, gross and net
 - FPC
 - Inpatient, nursing home, other
- Other service reimbursements
- Federal funding (Medicare GME—direct, indirect, capital)
- State funding
- State grants
- Medicaid GME payments
- Grants, foundation support, other sources

Residency Expenses/Year

- Salary, benefits, retirement
- Faculty, residents, other providers, and support FPC and program staff full-time equivalents
- Variable operational expenses: medical and non-medical supplies, pharmacy, transcription, etc.
- Fixed operational expenses: building and maintenance, equipment, etc
- Indirect expenses

Productivity of Residents and Faculty

- Direct patient care activities
- Indirect patient care activities (precepting, etc)

FPC—family practice center
 GME—graduate medical education
 RVU—relative value unit
 FTE—full-time equivalent

Factors Affecting Revenue

- Payer mix of patients (deductions from gross revenue)
- Billing and collections efficiencies (deductions from gross revenue)
- Days in Accounts Receivable (collections efficiencies)
- Clinic operations: hours open, staffing models, etc (productivity)
- FPC volumes of patients seen (productivity)
- RVU production (productivity)

Factors Affecting Expenses

- Staffing models of clinics (personnel costs)
- Other direct services provided within the FPC or residency program (space, supplies, personnel costs)
 - Women, Infants, and Children (WIC) programs
 - Social work services
 - Clinical pharmacy
 - Specialty clinics or services

Other Variables

- Other services provided (specialty clinics, inpatient activity, etc)
- Other income streams (research, administrative roles, etc)
- Definitions of an FTE, including time off allocations

was used to estimate the full-time equivalent (FTE) equivalency of each group of providers (residents, faculty, and other) to a full-time family physician, as defined by MGMA data of 3,624 visits per FTE academic physician,⁶ based on volume of patients seen. “Time provider” was used to estimate the FTE equivalency of each group of providers (residents, faculty, and other) to a full-time family physician, using 36 hours of direct patient office care weekly, based on time spent in clinic. Dividing FPC volume by 10,000 visits produced an estimate that has been used by others to define some categories of personnel needs. These ratios were also compared to MGMA group practice primary care models.⁵

Data analysis was performed on subsets of data, with cross-checking between subsets to assure internal consistency of data. The final analysis included only programs that were able to provide data that was accurate and complete for that subset of questions. Some program structures were so nonconforming that inclusion within a subset would inappropriately skew the data set and so were excluded. Data was analyzed through averages and applied standard deviation (SD), and correlations used to evaluate linkages between data elements.

Results**Revenues**

Revenue data were readily available for all 14 programs. The definitions were clear and consistent among all programs (Table 3).

GME Funding. Among 12 programs with Medicare funding data, federal GME revenue/resident varied 26% among programs, averaging \$75,036 per resident. This information was collected for the academic year 2000 and reflects anticipated payments, including decreases related to the Balanced Budget Act of 1997, not actual audited payments.

Medicaid GME payments to sponsoring institutions were not known for all states in the network, so this source of revenue was not included in the analysis. In Washington, these payments average an additional 6.44% of Medicaid payments for services performed in institutions with only family practice programs. Communications with the Washington Medical Assistance Administration indicate that additional Medicaid GME payments averaged \$24,184/resident/year with a range from \$4,553 to \$46,350 in 2001. Institutions with additional residency programs averaged a 21% Medicaid payment increase.

Table 3

Program Revenues

<i>Data Element</i>	<i># of Programs</i>	<i>Median Value</i>	<i>Mean Value</i>	<i>Range</i>	<i>Standard Deviation</i>
Federal GME revenue/resident FTE	12	\$72,703	\$75,036	\$44,783–\$118,229	\$19,593
Net patient revenue/resident FTE	12	\$93,720	\$97,913	\$41,912–\$135,629	\$27,052
Total revenue/resident FTE	12	\$189,695	\$192,604	\$138,694–\$249,636	\$34,416
% of total revenue from patient care	12	49.4%	50.1%	30.2%–60.5%	8.33%
% collections of gross charges	12	61.7%	61.7%	55.5%–72.5%	5.9%
Average gross billing/all visits	12	\$96.89	\$99.18	\$54.15–\$124.10	\$20.44

GME—graduate medical education
FTE—full-time equivalent

Table 4

Program Expenses

<i>Data Element</i>	<i># of Programs</i>	<i>Median Value</i>	<i>Mean Value</i>	<i>Range</i>	<i>Standard Deviation</i>
Total compensation for all employees	12	\$3,511,753	\$3,569,072	\$2,055,952–\$4,310,307	\$611,132
Total compensation for faculty only	12	\$941,536	\$954,346	\$715,531–\$1,155,214	\$160,203
% total compensation versus total expenses	11	75.7%	76.0%	61.6%–84.3%	7.0%
Subtotal of expenses from FPC and program operations	12	\$427,141 ¹	\$450,215 ¹	\$236,543–\$754,626	\$155,306
Expenses from building and maintenance	4	\$614,758 ²	\$666,077 ²	\$343,608–\$1,043,028	\$298,178
Total expense/resident	12	\$233,037 ³	\$237,196 ³	\$180,672–\$359,806	\$48,981
% total expenses covered by total revenues	12	81.4%	82.4%	59.9%–97.4%	13.0%
Cost per resident ⁴	12	\$28,625	\$44,592	\$4,768–\$110,170	\$36,563

FPC—family practice center

¹ An alternative methodology for this calculation gives a result of \$467,553. See discussion in Methods.

² An alternative methodology for this calculation gives a result of \$554,693. See discussion in Methods.

³ An alternative methodology for this calculation gives a result of \$236,572. See discussion in Methods.

⁴ Total expense/resident minus total revenue/resident, not including revenues from Medicaid graduate medical education

Patient Revenue. Net patient revenue per resident FTE varied by 28%, averaging \$97,913 per resident, based on the number of residents seeing patients in the core FPC. The volume of patient visits correlated with revenue production, and the majority of patient revenue was derived from FPC operations. Programs varied in the percentage of revenue derived from inpatient, nursing home, and outpatient professional activities.

An average gross charge per visit, including both inpatient and outpatient visits, was \$99.18, with an SD of \$20.44. Correlations including FPC volume versus inpatient volume, regional reimbursement differences, faculty-resident ratios, or nonphysician provider FTE did not explain this variability. The percent collection from gross charges, accounting for contractual allowances, did not vary widely among the programs and did not correlate significantly with payer mix.

Other Revenue. Revenue from patient care activities (excluding Medicaid GME) averaged 50.1% of total revenue across programs. The remaining revenue is from federal GME dollars, state funding, grants, and other sources. State funding contributed to total program revenues in 13 of the 14 programs in the UWFPRN; grant funding was included in revenues for 8 of 14 programs.

Expenses

Expense data were difficult to collect; there was variation in the methods of reporting data from the individual programs (Table 4). The major variation consisted of indirect expenses incurred by a sponsoring institution for fixed and variable expenses a program would bear if it were entirely autonomous and self-supporting. Examples of these variable indirect expenses included some or all of the following: human resources

and personnel management functions, information services, billing and collections services, general administrative support, transcription, physical plant (rent or mortgage), expenses associated with the physical plant (utilities, telephone, maintenance, etc), capital equipment purchases, and benefits or retirement packages for employees. Which expenses were categorized as indirect, and the extent to which a sponsoring institution allocated those expenses back to its residency, were specific and unique to each program. Additionally, some institutions allocated corporate overhead back to its service lines as a percentage of department expenses.

Operations and Salaries. All programs reported expenses from operations with the exception of one program that does not have its own FPC and cannot report associated expenses. Total salary and benefits compensation comprised the largest segment of total expenses, averaging 76.0%, with relatively low SD among programs. Retirement and other benefit expenses were indirect expenses for two programs and were added into the calculation of total compensation as a percentage of total salary (19.73%) to normalize the data.

Expenses Per Resident. In calculating the total average expense per resident, the difference between the two aforementioned methodologies used was less than 1% (\$624) (Table 4). The percentage of total expenses covered by total revenues averaged 82.4%, with a standard deviation of 13.0%. Mean cost per resident, using calculated values for total revenue per resident excluding Medicaid GME dollars, was \$44,592, with a range between \$4,768 and \$110,170, while the median cost per resident was \$28,625. Programs with lower costs per resident achieved that primarily by controlling expenses and to a lesser extent by achieving higher net patient revenues per resident. Programs with higher costs per resident had high indirect cost allocations from their sponsoring institutions, higher overall expenses, lower GME allocations, and/or lower patient revenues. There were no significant correlations between cost per resident and staffing ratios, faculty/resident ratios, or collection ratios.

Faculty Structure and Time Allocation

Programs averaged 22 residents in the 3 years of residency training and 8.2 core faculty from all disciplines (Table 5). Faculty staffing by FTEs was primarily by family physicians, with a faculty-to-resident ratio of 1:3.44. Programs averaged nearly one FTE of a behavioral scientist. Programs also reported an average of .8 FTE non-core faculty physicians contracted to perform specific responsibilities including direct patient care, such as specialty clinics and precepting of residents.

Programs reported both the allocation of work half days based on job descriptions (Table 6) and the num-

ber of direct patient care half days actually worked in the reported year by core faculty (Table 7). Actual clinics worked were less than calculated using the job description model in all but two programs.

Productivity

Programs reported actual data from clinic records or other management reports for numbers of clinics and patient visits per year worked per provider. Clinic sessions per week and patient visits per hour were both derived from the actual data supplied (Table 7). Using FPC billing information, the annual average total patient care visits for a UWFPRN site was 30,841, including 26,456 outpatient visits and 4,385 inpatient and miscellaneous visits, for an average program of 22 residents and 6.4 FTE family practice faculty.

Staffing Models in the FPC

Programs reported all staff in their FPC and program administration, specifying FTEs in each job role and category. Multiple parameters for comparison were used to evaluate staffing efficiencies in the FPCs. Based on volumes, the FPCs used 8% more total staff compared to MGMA standards; based on time in clinic, the FPCs used 11% fewer total staff. Staff per 10,000 visits was also 28% less in the FPCs compared to MGMA; some of this may be related to differences in definitions, as nonprovider visits were included in the FPC visit totals. Personnel needed for residency program administration, not included in group practice models, averaged 3.1 residency support staff per program, includ-

Table 5

Average Program¹ Structure, Core Faculty FTE²

Faculty Role	Average Program FTE
Administrative/directors ³	1.3
Core family practice	5.1
Internal medicine	.2
Pediatrics	.2
Behavioral science	.9
Pharmacist	.3
Other	.2
Total core faculty	8.2
Non-core ⁴ faculty	.8

¹ Network programs average 22 total residents per program.

² Core was defined as those faculty directly employed by the program.

³ Administrative/director refers to those faculty with a primary administrative role as either program director or medical director of the FPC.

⁴ Non-core was defined as those faculty contracted for specific responsibilities.

FTE—full-time equivalent

FPC—family practice center

Table 6

FTE Faculty Time Distribution by Half Day/Week
According to Job Description

Faculty	Direct Patient Care (Office)	Precepting Residents	Administrative or Research Time	Total Half Days/Week/FTE
Directors	2.4	2.5	4.6	9.5
Family practice core	3.3	4.0	2.0	9.3

ing program administrators, coordinators, secretaries, and other staff.

Discussion

Our data set presents comprehensive, systematically collected, and corroborated information for detailed examination of the operations of family practice residency programs. What has been presented are statistical averages across programs; these averages are not meant to be used as best-practice measures. However, these averages may be used for comparisons and identification of areas for further study.

In using these data for comparison to their own programs, readers must take into consideration the variety of operational structures, presence or absence of satellites or rural training tracks, institutional support and sponsorship, and ability to obtain all financial data. Additionally, programs vary in numbers of residents and structure of the faculty and the scope of FPC services.

Several other factors may influence comparison of sections of this data set to other residency programs. The reporting of Medicare GME revenues were projected values and may not correlate to a typical program fiscal or academic year. Because Medicare GME

revenues vary widely by region, a straight comparison with Pacific Northwest regional data would not be accurate.⁷ Significant regional differences in reimbursement exist for other payers as well.

Further, our analysis was unable to separate FPC expenses from other expenses of running residency programs because few programs could cleanly separate these elements. Additionally, unlike most residency programs, those in the UWFPRN re-

ceived support for malpractice insurance premiums from the University of Washington, and addition of that expense to program expense would increase program costs. Despite these significant variations in expense reporting, however, the total expenses reported in this study on a per-resident basis were similar to those programs in Ohio when adjusted for 2.5% inflation.³

A more accurate reflection of productivity would be the reporting of relative value units (RVUs) rather than patient visits. However, only two programs currently were able to provide RVU data. Faculty productivity measures such as precepting production (ie, numbers of residents precepted/session), inpatient productivity, revenue per faculty, scope of practice, or additional revenue produced outside of core residency functions were not assessed. Future study could focus on faculty work and performance.

The questionnaire provided detailed accounting of individuals in the FPC, although initial attempts to correlate staffing models with clinic and provider productivity produced no distinct conclusions. Time and volume equivalencies are artificial measures of the activity of residency programs. As initial measures, they allow comparisons between programs and against regional data sources. The information reported in this study cannot answer global questions regarding optimal staffing in residency models, best use of faculty time, or how to improve productivity.

Conclusions

Many institutions nationwide find it beneficial and within their mission to support family practice residencies. The value of a residency program is contingent not only on its financial balance sheet but also on the numerous intangible benefits and indirect revenue flows elsewhere within the institution's system.^{5,8} However, a family practice residency that can approximate "break even" will be more likely to survive financially as institutions experience budgetary crises. Development of accurate and applicable databases with which program directors and administrators can make reasonable comparison decisions and strategic plans is ever more critical. Benchmarking through an intensive questionnaire

Table 7

Annual FPC Productivity by Role Per FTE

Provider	Clinic Sessions* Per Year	Clinic Sessions* Per Week	Patient Visits Per Hour	Patients Visits Per Year
R1 resident	66	1.4	1.2 ± .3	271 ± 62
R2 resident	128	2.6	1.7 ± .4	695 ± 203
R3 resident	183	3.7	2.0 ± .4	1,200 ± 250
Director	101	2.2	2.4 ± .6	701 ± 197
Core family practice faculty	133	2.9	2.3 ± 0.7	967 ± 297

* Average clinic session=3.25 hours

FPC—family practice center
FTE—full-time equivalent

Table 8

Non-Provider Staffing of FPC Practices

Personnel	Average FTE	FTE/ Actual Provider ¹	FTE/ Volume Provider ²	FTE/ Time Provider ³	FTE/ 10,000 Visits	MGMA ⁴ FTE/10,000 Visits	MGMA ⁴ FTE/ Provider
Administration	1.3	.05	.22	.18	.52	1.12	.35
Front office	5.7	.19	.89	.72	2.15	2.74	.77
Billing	3.0	.10	.46	.39	1.11	2.90	.58
Medical records	3.6	.13	.59	.48	1.41	1.58	.34
Nursing	9.9	.33	1.56	1.26	3.70	4.04	1.26
Other ⁵	4.4		.92	.79	2.35	3.33	.98
Total	27.9		4.64	3.82	11.24	15.71	4.28

FPC—family practice center

FTE—full-time equivalent

MGMA—Medical Group Management Association

¹ “Actual provider” definition described in Methods.

² “Volume provider” definition described in Methods.

³ “Time provider” definition described in Methods.

⁴ MGMA data from 2000 estimating staffing of single specialty family practice offices per FTE provider and per 10,000 visits.⁶

⁵ “Other” includes laboratory, radiology, nutrition, social work, referral coordinators, and others.

and review process is obtainable and a positive step toward achieving these objectives.

Further development of the benchmarking process would allow programs to perform specific data analysis, consult with similar programs, check the process or operation of interest, and adopt this process within their institution. Programs could track data trends, the outcomes of operational enhancements, and analysis of satellite and rural training track sites. Moreover, a similar methodology for identifying, measuring, and converting intangible benefits into dollars would provide a framework for the determination of a cost benefit analysis and real value of family practice residencies to their institutions.

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