Graduate Follow-Up in the University of Washington Family Practice Residency Network

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The University of Washington School of Medicine is the only medical school serving the states of Washington, Alaska, Montana, and Idaho (WAMI). Strong efforts have been made, particularly during the last 10 to 15 years, to develop regionalized and decentralized medical education programs. Two major initiatives of the medical school were the establishment of the WAMI program[1] and the Department of Family Medicine. Since its inception in 1971, the Department of Family Medicine has placed high priority on the development of a regional network of affiliated family practice residency programs.

The Residency Network

Overall Development

From the outset, it was felt important to establish residency programs in varied settings to best meet the region's needs for family physician graduates. The first four family practice residencies included a university based program at University Hospital; two other Seattle based programs: Group Health Cooperative (an urban HMO—health maintenance organization) and the Doctors Hospital (a 160-bed general hospital); and Family Medicine Spokane (which relates to a consortium of three community hospitals). Subsequently, five additional affiliated programs were established: Providence Medical Center (a 500-bed Seattle hospital oriented to inner-city needs); Family Medicine Yakima Valley (a "one-and-two" program with the first year in Spokane and the last two years related to two community hospitals in Yakima, a community of 50,000 people); Family Medicine Tacoma (also related to a consortium of local hospitals); Madigan Army Medical Center near Tacoma; and Family Medicine of Southwest Idaho, which is related to three hospitals in Boise, Idaho. Table 1 shows the number of residents in training within the Network during the 1979-1980 year. Explorations are now under way to determine the feasibility of potential family practice residencies in Montana and Alaska.

Organizational Framework

With the help of a grant obtained from the W. K. Kellogg Foundation in 1975, together with state funds, efforts have been directed during the past five years to strengthen the interrelationships between all of the participating affiliated residency programs within the Network. A climate of cooperation has been developed and maintained to address such common needs as curriculum development, program evaluation, problem solving of operational and funding problems; coordination of resident rotations and electives, and related needs.[2] The nine-member programs within the Network interact as a "family" of programs, wherein considerable autonomy is preserved for each participating program while educational and clinical resources are shared to augment the learning climates in each setting. There are four standing committees in the following areas: learning resources, continuing education, evaluation, and research. Some of the current activities within the Network include development of a basic third-year family medicine clerkship in each residency program; an ongoing evaluation program utilizing resident experience logs, an in-training self-assessment examination, and a process of both external and internal review; development of

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Table 1. University of Washington Family Practice Residency Network 1979-1980

Program Site	Number of Residents in Training	Year Started
University Hospital, Seattle	18	1972
Doctors Hospital, Seattle	18	1972
Group Health Cooperative, Seattle	12	1972
Providence Medical Center, Seattle	12	1974
Family Medicine Spokane	18	1972
Family Medicine Yakima Valley*	12	1975
Tacoma Family Medicine	12	1978
Madigan Army Medical Center, Tacoma	27	1972
Southwest Idaho, Boise	16	1975
Total	145	

*The Yakima program is a "one-and-two" program, with the first year in Spokane hospitals and the subsequent two years based in Yakima

a common information management and data retrieval system; and an annual resident research conference.

Program Goals

The overall goals that are common to the member programs within the University of Washington Family Practice Residency Network are fourfold:

1. to train family physicians able to respond to changing health care needs of the four-state WAMI area in the Pacific Northwest
2. to produce well-trained clinicians capable of providing definitive care for the large majority of health problems of individuals and their families
3. to encourage group practice by program graduates together with appropriate utilization of allied health professionals, consultants, and other community resources
4. to meet the WAMI region's need for family physicians in terms of both numbers and geographic distribution by 1985.

Typical Curriculum

Although there are minor differences in curriculum content among individual programs within the Network, a typical curriculum has emerged as shown in Table 2.

Each three-year program includes a combination of ambulatory and inpatient training and experience, continuity of care for family practice patients in the family practice center and hospitals, and block rotations on various inpatient and ambulatory teaching services. Over a three-year period of training, each resident usually completes about one year of teaching rotations in internal medicine (including cardiology, neurology, and dermatology), five to six months of pediatrics, five to six months of obstetrics-gynecology, six months of surgery and its subspecialties (including ophthalmology, otolaryngology, orthopedics, and urology), two months of emergency medicine, one or two months of community medicine, and one month of psychiatry. A teaching program in behavioral science is presented longitudinally over at least a two-year period. The resident acquires further experience and training in all of the component parts of family practice through his/her ongoing care of patients in the family practice center and hospital over the full three years of residency training.

Resident Selection

Each participating program within the Network has its own National Resident Matching Program (NRMP) matching number, and is responsible for its own resident selection. Specific criteria for selection vary somewhat by individual program, depending upon each program's particular orientation and goals. For example, the program at Group Health Cooperative in Seattle is intended to train family physicians interested in prepaid group

Table 2. University of Washington Family Practice Residency Network Typical Curriculum[3]

	Inpatient Rotations (months)	Family Practice Center
First year		
Medicine	4	
Pediatrics	3	
Obstetrics-Gynecology	2	1 half-day/week
Surgery	2	
Emergency room	1	
Second Year		
Medicine	4	
Pediatrics	3	
Obstetrics-Gynecology	2	
Cardiology	1	2-3 half-days/week
Psychiatry	1	
Emergency room	1	
Third Year		
Medical selectives	4	
Surgical selectives	4	3-4 half-days/week
Electives	4	

practice; it is hoped that at least one half of program graduates will stay on with Group Health Cooperative, where family physicians provide the system's base for primary care. In contrast, the Providence Medical Center program is oriented to prepare family physicians for inner-city practice, the Yakima program is oriented to rural practice, and the Boise program is designed to prepare its graduates for practice in Idaho.

An attempt is made each year to balance the "mix" between graduates of the University of Washington School of Medicine and incoming residents from elsewhere in the country. A goal has been agreed upon whereby about one half of each program's residents are to be graduates of the University of Washington, but the many variables in the matching process may alter this proportion in either direction. Each member program includes affirmative action procedures in its selection process.

Network Graduates

At this writing, there have been 172 graduates of Network programs. This includes graduates from 1972-1979. The breakdown of this number by program is shown in Table 3.

Since the start of the member programs within the Network, there has been an attrition of 28 residents. This represents an overall attrition rate of about eight percent. During the last five years as the programs have become more established, the attrition rate has declined to about three percent each year. The dropout rate among male and female residents has been comparable.

Graduate Follow-Up Study

Methods

A six-page self-administered questionnaire was designed to survey the graduates of the Network programs. The questionnaire included questions about professional and non-professional activities, practice characteristics, hospital privileges, satisfaction with professional and personal life, and evaluation of residency training.

Because much of the information requested in the survey instrument required some practice in order to be meaningful, it was elected to survey only those graduates who had completed at least one year of practice (ie, graduates for the period from 1972 through 1978).

An updated list of all Network graduates main-

Table 3. University of Washington Network Graduates by Program, 1971-1979

Program	Number of Graduates
University Hospital, Seattle	38
Doctors Hospital, Seattle	35
Group Health Cooperative, Seattle	21
Providence Medical Center, Seattle	15
Family Medicine Spokane	29
Family Medicine Yakima Valley	13
Tacoma Family Medicine*	—
Madigan Army Medical Center, Tacoma**	10
Southwest Idaho, Boise	11
Total	172

*Program established in 1978; no graduates to date
**Affiliation established in 1978 (previous graduates not included in Network graduate follow-up)

tained by the Network office provided the names and addresses of graduates to be surveyed. Since the practice locations were known for virtually all graduates through 1979, data on their geographical distribution are presented for all 172 Network graduates.

Although almost two thirds of the graduates responded to the first mailing, special efforts were made to increase the final response rate. Codes on the top of each questionnaire allowed the identification of respondents and hence of non-respondents, who were sent a second questionnaire. Finally, non-respondents to the second mailing were sent a third copy of the questionnaire along with a personal note from the director (or other faculty member) of the program from which they graduated. In this manner a final response rate of 93.0 percent was achieved (119 out of 128). Since some respondents occasionally did not fully complete all questions of the questionnaire, the actual study sample was somewhat less than this number in some instances (eg, Tables 5-9).

Results

Location

Network graduates have distributed themselves throughout the region in rural, suburban, and urban communities. About three fourths have remained within the WAMI states. Well over one third (39 percent) have located their practices in communities smaller than 15,000 in population, while one third have settled in communities larger than 50,000 in population; the remainder have located in communities of intermediate size—between 15,000 and 50,000 people. Further details concerning the geographic distribution of Network graduates are provided in a companion paper.[4]

Field of Practice

Over 90 percent of 119 Network graduates responding to the survey consider family practice as their primary specialty. Nine (seven percent) are now practicing emergency medicine; one is in internal medicine and one in psychiatry. Over 97 percent of Network graduates have passed the certification examination by the American Board of Family Practice.

Nature of Practice

Single specialty, fee-for-service group practice (ie, three or more family physicians) is the most common practice mode, representing 32 percent of

Table 4. Type of Practice of 1972-1978 University of Washington Network Graduates

Type of Practice	Number	Percent
Fee-for-Service		
Solo	21	17.7
Partnership	12	10.1
Single specialty group	38	32.0
Multispecialty group	6	5.0
Other		
Health maintenance organization	12	10.1
Full-time teaching—medical school	3	2.5
Full-time teaching—community hospital	3	2.5
Military	2	1.7
National Health Service Corps	8	6.7
Emergency room	8	6.7
Other*	6	5.0
Total	119	100.0%

*Indian Health Service (2), Veterans Administration (1), Industry (1), Mental Health Center (1), Health Department (1)

Table 5. Time Distribution of Professional Activities of Full-Time Physicians* (N=96)

Activity	Average Number of Hours Per Week
Direct patient care	51.0
Administration	2.3
Teaching residents	1.0
Teaching students	1.1
Continuing medical education (courses, conferences, reading, etc)	3.7
Other (research, etc)	0.4
Total	59.5

*Data for full-time family physicians only (teachers, emergency room physicians, and "other" excluded)

graduates, while 10.1 percent are in partnership practice, and 17.7 percent have opted for solo practice. An additional 8.4 percent of graduates are presently in the military or in the National Health Service Corps. Table 4 provides a full breakdown of current practice settings.

The average work week for full-time family physician Network graduates is 59.5 hours. Graduates reportedly devote 85 percent of their time to patient care. Table 5 presents the distribution of their time in other professional activities.

The average number of patient encounters per week for Network graduates is 134.2. The relative frequency of patient encounters in the office, hospital, and other sites is shown in Table 6.

In terms of obstetrical care, 88.5 percent of the

Table 6. Location of Patient Encounters for Full-Time Physicians* (N=97)

Location	Average Number of Encounters per Week
Office	108.1
Hospital	14.6
Emergency room	7.2
Nursing home	3.8
Home	0.5
Total	134.2

*Data for full-time family physicians only (teachers, emergency room physicians, and "other" excluded)

Table 7. Proportion of Graduates Performing Selected Office Procedures* (N=95)

	% Performing Procedure
Vasectomy	87.4
Electrocardiogram (resting)	86.3
Closed reduction of fracture	69.5
Audiometric screening	51.6
Pulmonary function testing	48.4
X-ray films	47.4
Breast biopsy	44.2
Dilatation and curettage	22.1
Electrocardiogram (exercise testing)	7.4

*Data for full-time family physicians only (teachers, emergency room physicians, and "other" excluded)

respondents indicated that they provide prenatal care, while 86.5 percent reported that they perform deliveries. Graduates reported that they perform an average of about 46 deliveries per year. Most graduates restrict themselves to relatively uncomplicated obstetrics, though 31.2 percent of graduates report that they perform cesarean sections, while 74 percent act as surgical assistants for this procedure.

Network graduates report a relatively wide range of services provided in the office. Table 7 summarizes the frequency of some diagnostic and therapeutic procedures that are provided.

The large majority (92.6 percent) of Network graduates use problem oriented medical records. Almost 20 percent of the graduates utilize some kind of data retrieval system, such as the E-book.[5] Among the graduates in full-time family practice, 41 percent practice with physician extenders (medex, physician's assistant, or nurse practitioner).

Hospital Privileges

All of the Network graduates maintain privileges on the active staff of one or more hospitals. Of the full-time practicing family physicians, 90 percent are satisfied with their hospital privileges.

Table 8. Personal and Professional Satisfaction of Full-Time Physicians* (N=94)

	Percent of Graduates Who Feel: Dissatisfied	Neutral	Satisfied
Professional life	7.4	3.2	89.4
Practice arrangement	17.0	3.2	79.8
Income	14.0	9.8	76.4
Community life	7.4	4.3	88.3
Family life	19.2	2.1	78.8

*Data for full-time family physicians only (teachers, emergency room physicians, and "other" excluded)

Most have never been denied any hospital privileges which they requested. Eighteen graduates (18.9 percent) reported having some privileges denied.

The Network graduates in full-time family practice were asked to what extent the high cost of malpractice insurance has influenced the way in which they practice medicine. It is of interest that 65 (69.9 percent) reported no influence. Twenty-six (24.7 percent) reported "slight influence," whereas five (5.4 percent) felt that this factor "considerably influenced" their practice.

Personal and Professional Satisfaction

Graduates of Network programs who are in full-time family practice are generally fairly well satisfied with their personal and professional life. They were asked to rate several parts of their life on a three-point scale (ranging from "dissatisfied" to "neutral" to "satisfied"). Table 8 displays their responses with regard to their levels of satisfaction with different aspects of their life.

Of all Network graduates including those in the National Health Service Corps (NHSC) and other practice settings, about two fifths plan some major changes in their practices over the next two years; more than one fifth of the graduates plan to expand their current practice (eg, add a partner or allied health personnel). About 14 percent of the graduates plan to alter their practice in some way (eg, leave the military or NHSC, enter private practice, or relocate their practice). It is of interest that one third of the graduates expressed definitive interest in future research studies in collaboration with the Department of Family Medicine at the University of Washington.

Preparation for Practice

Network graduates were asked to assess the extent to which they felt prepared for practice with regard to 60 content or process areas of medical practice. Table 9 shows their responses to each of these areas in terms of whether they felt "underprepared," "adequately prepared," or "overprepared."

Several overall conclusions can be drawn from these responses. First of all, very few graduates feel overprepared in any area, except for about ten percent in uncomplicated obstetrics. The great majority of graduates feel adequately prepared for most of their practice needs. Some areas of practice, however, are commonly perceived as representing deficiencies in previous residency training, such as the care of rehabilitative problems, developmental disorders and learning problems of childhood, fracture care, and some aspects of community medicine and practice management.

Institutional Change in Residency Positions by Specialty

Since both institutional commitment to family practice and some degree of redistribution of the "mix" of graduate medical education positions by specialty are required to assure the continued and

Table 9. Graduates' Evaluation of Residency Training as Preparation for Practice (N=89–97)

Subject Area	Percent of Graduates Who Feel: Underprepared	Adequately Prepared	Overprepared
Care of common clinical problems (eg, fatigue, headache, ill-defined complaints)	6	92	2
Providing health maintenance	9	86	5
Use of common drugs	2	95	3
Family structure and function	33	66	1
Psychosomatic problems	23	76	1
Psychosocial components of major medical illness	18	82	0
Proficiency in physician-patient relations	3	96	1
Personal and professional growth	30	70	0
Referral and consultation process	4	92	4
Arranging for continuing education	25	74	1
Allergy	41	59	0
Cardiology	10	84	6
Dermatology	15	81	4
Gastroenterology	4	94	2
Hematology	20	80	0
Infectious disease	8	92	0
Nephrology	31	68	1
Neurology	33	67	0
Pulmonary	5	93	2
Radiology	16	82	2
Rehabilitation	55	44	1
Rheumatology	26	74	0
Newborn care	8	88	4
Well-baby care and child development	9	89	2
Developmental disorders	48	52	0
Learning problems of childhood	76	24	0
Acute childhood illnesses	2	96	2
Chronic childhood illnesses	25	72	3
Uncomplicated delivery	1	89	10
Forceps delivery	31	66	3
Cesarean section	43	55	2
Gynecologic medical management	12	88	0
Gynecologic surgical management	35	64	1
Office surgery and procedures	17	82	1
General surgery	23	72	5
Emergency surgery	27	73	0
Ophthalmology	43	57	0
Otolaryngology	10	89	1
Urology	9	91	0
Trauma	23	74	3
Fracture care	48	50	2
Tubal ligation	29	71	0
Stages of human development	33	67	0
Behavior disorders	31	67	2
Psychiatric disorders	26	74	0
Counseling skills	41	58	1
Assessing community health needs	56	44	0

Table 9. continued

Subject Area	Percent of Graduates Who Feel: Underprepared	Adequately Prepared	Overprepared
Using community health resources	29	69	2
Exercising community leadership	44	55	1
Understanding hospital organization and function	43	56	1
Obtaining hospital privileges	16	83	1
Medical and local priorities	23	77	0
Relationship with other physicians	8	91	1
Legal aspects of family practice	36	64	0
Organization of practice	39	59	2
Personnel issues	43	57	0
Financial management and business records	60	39	1
Office management	50	49	1
Clinical records	12	87	1
Estate planning	79	21	0

long-term success of family practice residency training, it is important to assess the changes that have occurred in this respect during the 1970s within the University of Washington system of affiliated hospitals. A useful measure of changing trends is the distribution of first year (PG_1) and total residency positions. Tables 10 and 11 show the distribution by specialty for PG_1 and all house staff positions, respectively (among all university based and affiliated residency programs), for the years 1970, 1975, and 1980.

It can be noted that family medicine has made excellent progress and now represents 30 percent of all PG_1 positions and 23.4 percent of the total number of house staff positions. These findings, together with the total proportion of PG_1 positions in the three primary care fields, compare favorably with current national guidelines for the training of primary care physicians.

Comment

The findings that emerge from this graduate follow-up study are extremely helpful, not only as a measure of the adequacy of the residency programs themselves, but also in providing an initial profile of the residency graduates and their practices. The ten-year experience of the University of Washington Family Practice Residency Network has been positive. Retention in the field and within the geographic area served by the Network is high. A broad range of services are being provided by recent graduates. At an average age of 34 years, they tend to favor partnership and group practice, are evenly distributed among communities ranging from rural to urban, maintain an active hospital practice (usually including obstetrics), and are generally fairly well satisfied with their personal and professional lives. Although a large majority of the Network graduates feel adequately prepared for most of their practice needs, some deficiencies in previous residency training have been commonly observed.

The feedback loop that has been established by this study between the graduates and their residency programs will now be maintained on a continuing basis. The results of this study will be used to revise curricula and improve teaching in the areas of deficiency that have been noted. In addition, efforts will be directed to increase the ties between recent graduates and Network programs and the Department of Family Medicine through part-time teaching, continuing medical education, and collaborative research projects.

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Table 10. Specialty Distribution for University of Washington PG_1 Residency Positions

Department	Number of PG_1 Positions by Year 1969-1970	1974-1975	1979-1980
Family Medicine	—	26	48
Internal Medicine	14	26	34
Pediatrics	12	12	15
Total Primary Care	26	64	97
Anesthesiology	—	—	8
Dermatology			
Neurology			
Neurological Surgery			
Obstetrics-Gynecology	—	3	5
Ophthalmology	—	—	3
Orthopedics	—	4	5
Otolaryngology			
Pathology	5	3	8
Physical Medicine/Rehabilitation	—	3	6
Psychiatry	—	2	8
Radiology	—	—	5
Surgery	7	8	11
Urology	—	1	—
Flexible/Rotating Internship	6	—	—
Other			
Total	44	88	156

PG_1 = First year of graduate training

Table 11. Proportion of Total University of Washington House Staff in Family Medicine

	Number of Positions by Year 1969-1970	1974-1975	1979-1980
Family medicine	—	70	144
Total house staff	367	494	614
Proportion in family medicine	—	14.1%	23.4%

MD (Family Medicine Spokane); Kenneth E. Holtzapple, MD, Col, MC (Madigan Army Medical Center); Richard H. Layton, MD (Providence Medical Center, Seattle); Robert W. Matthies, MD (Southwest Idaho, Boise); Robert B. Monroe, MD (Group Health Cooperative, Seattle); Joseph N. Scardapane, MD (Doctors Hospital, Seattle); Ronald Schneeweiss, MD (University Hospital, Seattle); and Roy H. Virak, MD (Tacoma Family Medicine).

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