

Foreign Medical Graduates in the 1980s: Trends in Specialization

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Abstract: Secondary analysis of data collected by the American Medical Association and the Graduate Medical Education National Advisory Committee (GMENAC) suggests that measures to diminish the flow of alien Foreign Medical Graduates (FMGs) into the United States have been less effective than planned. Declining trends in the proportion of FMG house officers in the mid- to late-1970s have recently stabilized around 19 per cent. There has also been a dramatic increase in the number of US citizen Foreign

Medical Graduates (USFMGs) in house officer positions. A pattern of alien FMG and USFMG house officer specialization correlates with specialties designated by the GMENAC as shortage areas by 1990 ($r = -.49, p < .05$). Despite the GMENAC prediction of a surplus of physicians by 1990, differential selection of alien FMGs and USFMGs into shortage specialties may assure their substantial future presence in the US health care system. (*Am J Public Health* 1984; 74:698-703.)

Statement of The Problem

The Health Professions Educational Assistance Act of 1976 (PL 94-484) contained, among other important initiatives,¹ a major effort directed against the immigration of alien Foreign Medical Graduates (FMGs) to the United States.* The Act was seen by some observers as the mechanism which would virtually eliminate the alien FMG presence in this country.³ For others, however, concern was raised that the Act would have less impact on FMG inflow than its drafters and supporters had hoped.⁴ By 1983, that concern seemed justified. The most recent data reveal the presence of 96,605 FMGs in the United States; as of 1979, this count was 21 per cent of all physicians. Although there existed a downward trend in the numbers of FMGs in house officer positions in the late 1970s, their numerical presence has nevertheless remained substantial (Table 1). In the 1982-83 training year, for example, 19 per cent of all house officers were FMGs.

The Graduate Medical Education National Advisory Committee (GMENAC) which completed its report in 1980, in consultation with the Educational Commission for Foreign Medical Graduates (ECFMG), estimated an average annual inflow of 3,100 FMGs from 1979 through 1982. From 1983 until 1987, they predicted an average annual inflow of 4,100.¹¹ Thus, official public and private sources confirm the view that FMGs continue to add materially to the US physician pool, despite a GMENAC warning of a 70,000 "surplus" of physicians by 1990.

Further confounding the matter of FMGs in American medicine is the continuing role of USFMGs who attend

foreign medical schools and return to the United States to enter house officer programs.¹² This group of medical graduates adds to the complexity of the problem from both analytical and policy-oriented perspectives. Aside from the obvious differences between USFMGs and alien FMGs—e.g., US citizenship, no visa restrictions, familiarity with US life and culture—there is the less well-known matter that USFMGs need only pass the older ECFMG examination rather than the more difficult Visa Qualifying Examination (VQE) that many alien FMGs must take in order to qualify for a house officer position. This less difficult examination may contribute to an increasing inflow of USFMGs into the nation.

This article focuses on one facet of the FMG presence in US medicine: the current and projected distribution of FMGs by specialty choice. Earlier studies confirmed the view that FMGs were distributed disproportionately across specialties with such areas as anesthesiology, pathology, and therapeutic radiology, among others, showing much higher than average concentrations.¹³ More recent work by Way, *et al*,¹⁴ and Goodman and Wunderman,¹⁵ found that physical medicine, anesthesiology, pathology, therapeutic radiology, nuclear medicine, and psychiatry were prevalent among the specialties with large percentages of FMGs. One study noted a greater proportion of FMGs choosing psychiatry as a specialty, since entrance requirements were somewhat less rigorous due to numerous unfilled openings.¹⁶ A report by the National Science Foundation stated that both state mental and chronic disease hospitals would suffer serious physician shortages if FMGs were not available for these institutional house officer positions.¹⁷

Our hypothesis, therefore, is that FMGs are still disproportionately represented across the various specialties and that these disproportions are likely to be maintained throughout the 1980s. We discuss some implications of this uneven distribution in the anomalous context of a physician "surplus". How can the United States continue both to import alien FMGs and to welcome home USFMGs when an overall abundance of physicians appears to be developing?

Analysis

Summary data in Table 1 show the 22-year trend in the numbers of FMG house officers.** From 1961-1962, the

**These figures omit "other trainees," notably postdoctoral fellows, because of the unavailability of published data on them from 1975-1976 onward. Nevertheless, their numbers were considerable: 1,024 in 1961-1962 and 4,186 in 1974-1975.⁵

*By FMGs we refer to individuals receiving their medical degrees from countries other than Canada and the United States. Foreign nationals who are FMGs are referred to as alien FMGs while US citizens who are FMGs are referred to as USFMGs. Exclusion of Canadian medical graduates from the FMG rubric stems from the American Medical Association's practice of considering Canadian medical schools as equivalent to those in the United States, thereby waiving the certification procedures applied to FMGs. This is understandable given the accrediting process undertaken by the Liaison Committee on Medical Education (LCME) which includes Canadian as well as US schools. However, the omission of Canadian data obscures the political, migratory, and systemic issues attendant to the United States' reliance on foreign medical personnel.²

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TABLE 1—House Officers in the United States, 1961–62 to 1982–83

Training Year	All House Officers	FMG House Officers	% FMG Of All House Officers	Training Year	All House Officers	FMG House Officers	% FMG Of All House Officers
1961–62	37,810	8,996	23.8	1972–73	56,244	18,364	32.7
1962–63	38,044	8,731	22.9	1973–74	60,109	18,333	30.5
1963–64	39,121	9,618	24.6	1974–75	62,512	18,115	29.0
1964–65	41,102	10,974	26.7	1975–76	NA	16,880	—
1965–66	41,568	11,474	27.6	1976–77	60,561	15,097	24.9
1966–67	42,416	12,298	29.0	1977–78	56,019	13,709	24.5
1967–68	44,162	13,540	30.7	1978–79	63,163	12,821	20.3
1968–69	45,511	14,471	31.8	1979–80	64,615	12,070	18.7
1969–70	47,947	14,999	31.3	1980–81	61,465	12,078	19.7
1970–71	51,015	16,282	31.9	1981–82	68,217	13,194	19.3
1971–72	54,578	17,466	32.0	1982–83	69,142	13,123	19.0

SOURCE: Data adapted from various medical education numbers of JAMA.^{5–10}

number of FMGs rose steadily from 8,996 house officers to a peak of 18,364 in 1972–1973. Since then their numbers have steadily decreased until the 1981–1982 training year when a new upswing was registered. The 1982–1983 figure (13,123) is still 46 per cent larger than the 1961–1962 figure. Table 2 illustrates that following the peak year of 1973 when 7,419 FMGs (44.5 per cent of the total) were licensed for the first time, a steady decline has occurred. Nevertheless, from 1979 through 1981, the decline was not precipitous, and the data suggest that roughly 3,000 FMGs are licensed each year, a 17.6 per cent average of all new licentiates during this period.

In Figure 1, trends in the eight largest specialty areas have been plotted over time to demonstrate changes in the proportions of FMGs to all house officers, i.e., FMGs plus US Medical Graduates (USMGs). Specialties showing large proportionate declines include pathology, anesthesiology, and internal medicine. Less abrupt declines were recorded in obstetrics and gynecology, pediatrics, and surgery. Psychiatry actually evidenced an increase until 1977 before declining, but this specialty has yet to return to its slightly lower 1971 and 1972 levels. Family practice has consistently hovered around 10 per cent. The data display a leveling off over the period 1978–1982, suggesting a stabilization of the FMG presence in these large specialties. In addition, there is a narrowing of the variation of FMGs' proportions over the period, i.e., the gap between traditional "FMG" specialties (anesthesiology or pathology, and other specialties) has

diminished from an early 1970s high of approximately 45 per cent to roughly 20 per cent (example compares pathology with family practice).

Greater variability exists across the 20 largest specialty areas and invites a more comprehensive look at FMG specialization. As Table 3 shows, the variability of this larger group of specialties ranges from a low of 4.7 per cent (ophthalmology) to a high of 47.1 per cent (physical medicine/rehabilitation).*** The question raised by this dispersion of proportions is whether FMG house officers may be training in a particular pattern in comparison with USMGs.

In view of the predicted "surplus" of physicians, we

***Specialties with at least 250 FMG and USMG house officers combined were used in Table 3 and Figure 2. Smaller specialties, (allergy and immunology, dermatology) evidenced too much fluctuation from year to year in their proportions of FMGs to provide a base robust enough for analysis.

TABLE 2—Initial Licenses Issued by State Boards of Medical Examiners, 1971–1981

Year	Number of Initial Licenses		% FMG
	All	FMG	
1971	12,257	4,314	35.2
1972	14,476	6,661	46.0
1973	16,689	7,419	44.5
1974	16,706	6,613	39.6
1975	16,859	5,965	35.4
1976	17,724	6,436	36.3
1977	18,175	5,851	32.2
1978	19,393	4,578	23.6
1979	19,896	3,566	17.9
1980	18,172	3,310	18.2
1981	18,831	3,131	16.6

SOURCE: Data from reference 18.

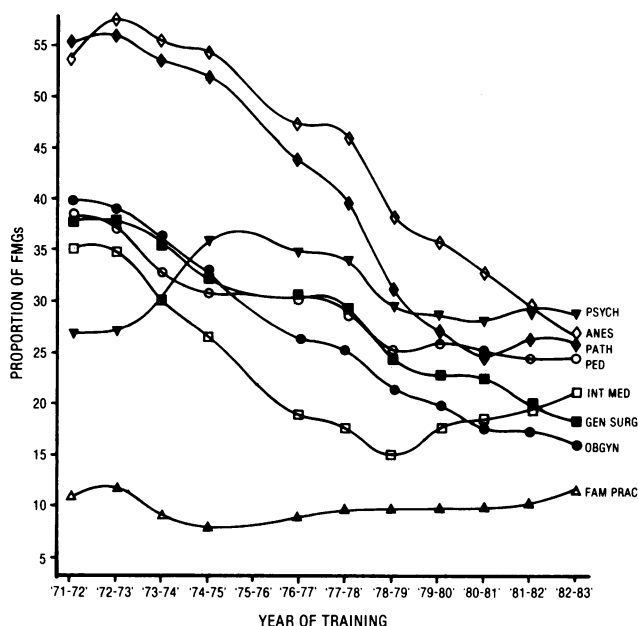


FIGURE 1—Trends in FMG House Officers as a Proportion of all House Officer, Eight Largest Specialties, 1971–72 to 1982–83

SOURCE: Data adapted from various medical education numbers of JAMA. See references 6, 8–10, 19–23.

TABLE 3—All FMG House Officers as a Proportion of All House Officers and USFMG House Officers as a Proportion of All FMG House Officers, by Specialty, 1982–1983

Medical Specialty	All FMG House Officers	All FMG % of All House Officers	All USFMG House Officers	USFMG % Of All FMG House Officers
Orthopedic Surgery	145	5.3	106	73.1
Family Practice	822	11.7	589	71.7
Ophthalmology	72	4.7	49	68.1
Otolaryngology	130	13.0	77	59.2
Ob/Gyn	758	16.1	420	55.4
Surgery	1457	18.1	776	53.3
Internal Medicine	3607	21.0	1895	52.5
Dermatology	44	5.6	23	52.3
Radiology	481	13.3	236	49.1
Plastic Surgery	63	17.3	30	47.6
Urology	251	24.1	116	46.2
Neurology	300	23.5	136	45.3
Neurosurgery	81	13.0	36	44.4
Child Psychiatry	142	26.9	62	43.7
Anesthesiology	898	26.6	346	41.6
Phys Med/Rehab	294	47.1	122	41.5
Pediatrics	1402	24.5	559	39.9
Psychiatry	1217	28.7	467	38.4
Thoracic Surgery	48	17.3	18	37.5
Pathology	631	25.9	203	32.2

SOURCE: Data from reference 10.

examined whether future GMENAC shortage specialties were drawing relatively larger numbers of FMGs. For the 20 largest specialties, Figure 2 displays the percentage of house officers who were FMGs plotted against GMENAC-derived shortage or surplus ratios.²⁴ In the supply/requirement ratio, along the vertical axis, the numerator is the estimated supply of physicians in 1990, and the denominator is the projected requirement. The GMENAC determined that any specialty with a ratio of less than .80 would experience a shortage by 1990. Between the ratios of .80 and 1.20, a "near balance" situation is predicted. Finally, a ratio of greater than 1.20 is designated as a surplus. When the proportions of FMGs were plotted against these ratios, a negative correlation resulted ($r = -.49, p < .05$): greater proportions of FMG house officers are found now in specialties which will tend toward the shortage side by 1990.

Of the 20 specialties, only three fall into the "shortage" classification proposed by the GMENAC. This means that although the negative relationship exists, the matter may be relative: many FMGs are currently training in specialties which in seven to eight years will be surplus areas. This is true in pathology and pediatrics where moderately above-average proportions of FMGs, 25.9 and 24.5 per cent respectively, were found.

What of the USFMGs among the total group of FMGs? Although the issue of USFMGs has received much attention, population counts of them have only recently been available. In Table 4, earlier estimates of the numbers and proportions of USFMG house officers are compared with more recent information. In the early 1970s, estimates of USFMG house officers hovered between 5 and 8 per cent of all FMGs. By the 1982–1983 training year, the proportion jumped to 48.7 per cent (Table 4). Subtracting these USFMGs from the combined FMG pool leaves, in each of the four years beginning 1979–1980, 7,841, 7,288, 7,356, and 6,735 alien FMGs, respectively. Thus, while the number of USFMGs

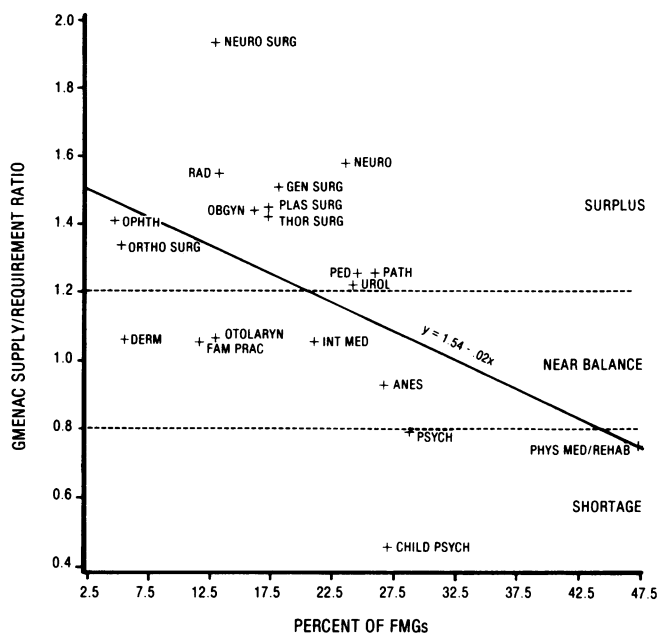


FIGURE 2—Correlation between Proportion of FMG House Officers and GMENAC 1990 Specialty Supply/Requirement Ratios, for the 20 Largest Specialties, 1982–83

SOURCE: Data adapted from references 10 and 24.

has increased over this period (4,229 to 6,388), the decline in the number of alien FMGs appears to have moderated.

As there is variation among specialties with regard to the relative presence of FMGs compared to USMGs, so is there variation with regard to the proportionate presence of USFMGs to alien FMGs (Table 3). This ranges from an upper limit of 73.1 per cent for orthopedic surgery to a lower limit of 32.2 per cent for pathology. In other words, USFMGs make up the bulk of the FMG pool in specialties like orthopedic surgery, family practice, and ophthalmology. USFMGs are underrepresented in pathology, thoracic surgery, psychiatry, and pediatrics, among others.

There appears to be differentiation between USFMGs and alien FMGs with respect to house officer training, and

TABLE 4—Number of USFMGs, and USFMGs as a Per Cent of All FMGs, by Year, 1971–72 to 1982–83

Year	Number of USFMGs	% USFMGs of All FMGs
1971–72	699	5.3
1972–73	657	3.6
1973–74	1,198	6.5
1974–75	1,738	9.6
1975–76	1,466	8.7
1976–77	2,820	18.7
1977–78	3,361	24.5
1978–79	3,902	30.4
1979–80	4,229	35.0
1980–81	4,790	39.7
1981–82	5,838	44.2
1982–83	6,388	48.7

SOURCES: Data for 1971–72 from²⁵; data for 1975–76 from¹⁵; data for 1979–80, 1980–81, 1981–82 from⁹; data for 1982–83 from¹⁰. Data for all other years obtained by interpolation using the regression equation calculated from the six published counts and estimates of USFMGs:
 $y = -38275.06 + 540.73x, r = .98, p < .001$.

the pattern followed by USFMGs seems to recapitulate the preferences of USMG house officer specialty choice. For the 20 largest specialties, a negative association exists between the proportion of USFMGs to all FMGs and the proportion of all FMGs to the total number of house officers ($r = -.68$, $p < .05$). That is, in specialties where USMGs prevail, USFMGs predominate over alien FMGs. Conversely, specialties in which FMGs are over-represented when compared to USMGs tend toward a preponderance of alien FMGs vis-a-vis USFMGs.

Seemingly, this would lead to the conclusion that alien FMGs are even more critical as medical personnel serving the GMENAC shortage specialties than originally suggested. If USFMGs move toward specialties already occupied by USMGs, then one could posit that alien FMGs are left to fill specialties eschewed by both American-born groups. However, when an analysis similar to that in Figure 2 is performed separately for alien FMGs and USFMGs, inversely proportional relationships are found. That is, for alien FMGs alone, the correlation coefficient between their proportion of all house officers in each specialty and the GMENAC surplus/shortage ratios is $-.47$ ($p < .05$). The analogous calculation for USFMGs is $-.50$ ($p < .05$), an approximately similar association. Both foreign-trained groups tend to fill specialties with shortage and near-balance physician supplies for 1990.

The paradox can be explained by examining more closely the proportionately large USMG specialties such as ophthalmology (95.3 per cent), orthopedic surgery (94.7 per cent), dermatology (94.4 per cent), family practice (88.3 per cent), and otolaryngology (87.0 per cent). These specialties contain so few FMGs that the large presence of USFMGs relative to alien FMGs has little overall effect on the negative relationship between USFMGs and the GMENAC supply/requirement ratios. As a result, not enough USFMGs in these almost exclusively USMG specialties are present to make a difference, and since most of these specialties are the GMENAC designated surplus or near-balance specialties, USFMGs must, like their alien FMG counterparts, distribute themselves elsewhere.

Discussion

The preceding analysis has described an important pattern in regard to the presence of both alien FMGs and USFMGs in the physician pool of the US. They train disproportionately in specialties which are projected to be shortage or near-balance specialties by 1990. The causal issue of whether FMGs come to the United States *because* there are vacancies in shortage areas cannot be answered from these data. It may be that FMGs "follow the path of least resistance" and, after having passed through visa and examination barriers, enter into whatever specialty positions are available. A complete explanation of alien FMG behavior must separate individual motives (e.g., to enjoy the benefits of US medical practice) from systemic issues (e.g., imbalances among the medical specialties) which make such migration possible. The same problem appears to hold for USFMGs because they too operate in the same system. More research is necessary on these issues.

Unless there is substantial shifting from one specialty to another by both FMGs and USMGs currently in training, and/or there is major expansion of specialty opportunities in areas now restrictive to FMGs, house officers' specialty choices and the resulting distribution may well last into the

late 1980s and early 1990s. Even in the extreme case in which all alien FMGs, regardless of visa status, were somehow forbidden to practice medicine in the United States after training, physician shortages in particular specialties might actually cause a greater reliance on alien FMG house officers because of a diminution in the number of physicians remaining to practice. Note also that none of these restrictive measures would have any bearing on the inflow of USFMGs.

A policy building on the GMENAC or any other projections would have to begin immediately to affect the physician supply at the end of the decade. Some might argue that it is in fact too late, that changes would not be felt until well into the 1990s. Others have argued that the GMENAC methodologies and projections were flawed,²⁶ and that a national policy in regard to specialty distribution based on the GMENAC would be unsound. Criticism of the GMENAC notwithstanding, it remains the single most ambitious and thorough effort to engage in physician forecasting undertaken in the United States.²⁵ If there were a conscious effort to direct young USMGs into areas they have apparently avoided, the GMENAC would probably be as sound a basis as any presently available from which to work. In theory, this would decrease the reliance of the nation on both alien FMGs and USFMGs, two courses of action recommended by the GMENAC.

As a practical matter, such planning efforts are not likely. Rational physician manpower planning on a national scale has not had much success and the efforts of various organizations and agencies to affect manpower supply and distribution have met serious difficulties for the last half-century.²⁷ Today, some of the changes which PL 94-484 were supposed to bring about are still awaited. In the area of diminishing the nation's reliance on FMGs, particularly alien FMGs, its effects are unclear. Goodman and Wunderman argued that the Act had an impact on alien FMGs, particularly those entering the United States on Exchange Visitor visas.¹⁵ While this may have been true for these temporary immigrants, the larger picture is more problematic. Quite plainly, the overall FMG supply began to diminish well before the enactment of the 1976 Act (Figure 3). The decline, which began in 1973-1974—fully four years before the Act became operational in 1978—became precipitous in 1975. When the data for alien FMGs are plotted separately as is also done in Figure 3, it is even clearer that the decline in alien FMGs began before the enforcement of the provisions of the Act.

In addition to the leveling off of the alien FMG presence in the United States, there is the prospect of a steadily increasing number of USFMGs. If the linear prediction equation used to estimate the numbers of USFMGs during many of the training years of the 1970s (Table 4) provides a valid basis for extrapolating to future years, by 1990 there will be over 10,000 USFMG house officers.

Finally, all this may still underestimate the true magnitude of FMG migration. There may be an additional number of uncertified alien FMGs in the nation, a topic of some debate in the mid-1970s.²⁸⁻³¹ Although there is no current national estimate of the size of this potential pool of medical practitioners, a recent report estimates over 1,210 unlicensed alien FMGs in California; hence they may constitute a considerable source for the delivery of health services.³²

Groups such as the Association of American Medical Colleges (AAMC) have taken positions to require more stringent testing procedures to screen out inadequately trained FMGs.³³ The AAMC was particularly concerned

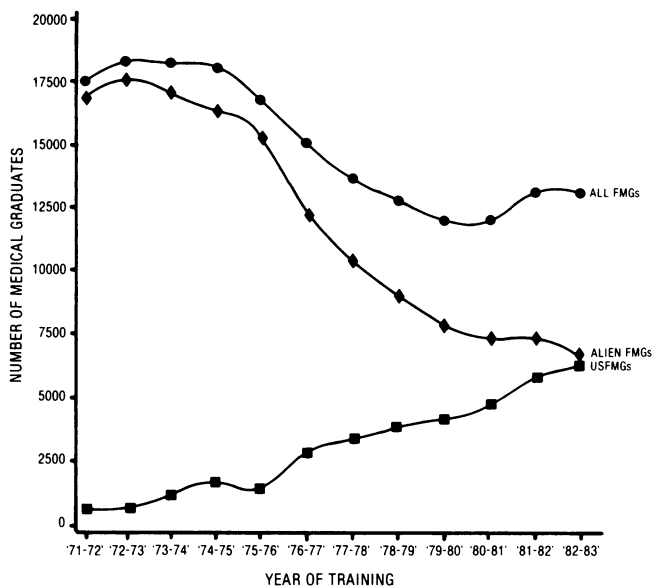


FIGURE 3—Trends in Numbers of All FMG, Alien FMG, and USFMG House Officers, All Specialties, 1971-72 to 1982-83

SOURCE: Data for all FMG House Officers from Table 1; Data for USFMGs from Table 4; Data for alien FMGs obtained by subtracting USFMGs from all FMGs.

about the rise in the number of proprietary foreign medical schools catering to US citizens. These schools were alleged to provide limited undergraduate medical instruction and to pose a hazard to the practice of medicine in the United States.³⁴

A partial remedy may rest in the new "Foreign Medical Graduate Examination in the Medical Sciences," announced in January 1983 by the ECFMG and the National Board of Medical Examiners (NBME).³⁵ Replacing the Visa Qualifying Examination (VQE) and the older ECFMG examination, this new two-day test, effective July 1984, is designed to assess the knowledge of all FMGs in the basic and clinical sciences and will supplant a two-examination system—one for alien FMGs, the other for USFMGs. Whether this procedure will make inroads in stemming further the migration of alien FMGs to the United States and in discouraging international medical studies by US citizens remains to be seen.

Our purpose is not to denigrate new proposals. The intent is to present a view that FMGs, both foreign and US, have not disappeared and are not likely to do so. Their decline until the late 1970s was probably a function more of the competitive pressure of the increasing numbers of graduates of US medical schools than of barriers contained in PL 94-484. If US medical schools have finally reached a plateau in applications (40,569 in 1977-1978; 36,727 in 1981-1982),³⁶ then one might in turn expect to witness a stabilization in the numbers and proportions of FMGs. This will occur despite the predicted surplus of physicians and the failure of the number of available house officer positions to keep pace with the number of applicants. The current negative correlation between percentages of FMGs and surplus specialties lends credence to Stimmel and Graettinger's argument that this "pool of US citizens and foreign nationals may help correct the maldistribution of physicians, as well as provide care in underserved specialties."³⁷ A pattern of differentiation and

stratification of house officer subgroups within the specialties does exist, and it is likely to be relatively stable until the next decade.

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Applications Invited for Third Round of Clinical Nurse Scholars

The Robert Wood Johnson Foundation, assisting nursing educators to acquire new skills in the increasingly complex and demanding challenges of hospital nursing practice, has announced its second class of nine Clinical Nurse Scholars and called for the next round of applicants.

The Scholars will spend two years at one of three academic health sciences centers, where the nursing and medical schools jointly conduct the program: University of California, San Francisco; University of Pennsylvania; and University of Rochester.

The Clinical Nurse Scholars Program offers two years of postdoctoral education in clinical care and research for nurses planning teaching careers, combined with in-hospital service and research responsibilities. The program's goal is to develop a cadre of nurse faculty that can help improve clinical nursing practice, conduct clinical research, provide more clinical experiences for nursing students, and increase the responsibility of nursing schools for managing nursing services of teaching hospitals.

Scholars will conduct clinical nursing research and will be offered practice opportunities in various specialty areas and experience in administration and management. They will receive stipends equal to their current salary for 24 months, not to exceed \$40,000 yearly, in addition to benefits.

The Foundation is inviting applications for the third cycle of the program, in which up to nine more Clinical Nurse Scholars will be selected. The deadline for submission of applications for the 1985-86 academic year is October 1, 1984. Scholars will be notified by March 11, 1985 of their selection by the National Advisory Committee.

Requests and applications should be addressed to:

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