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Training in Internal Medicine: Mystery, Inquiry, and Technology

Reflections from Interviews and Surveys

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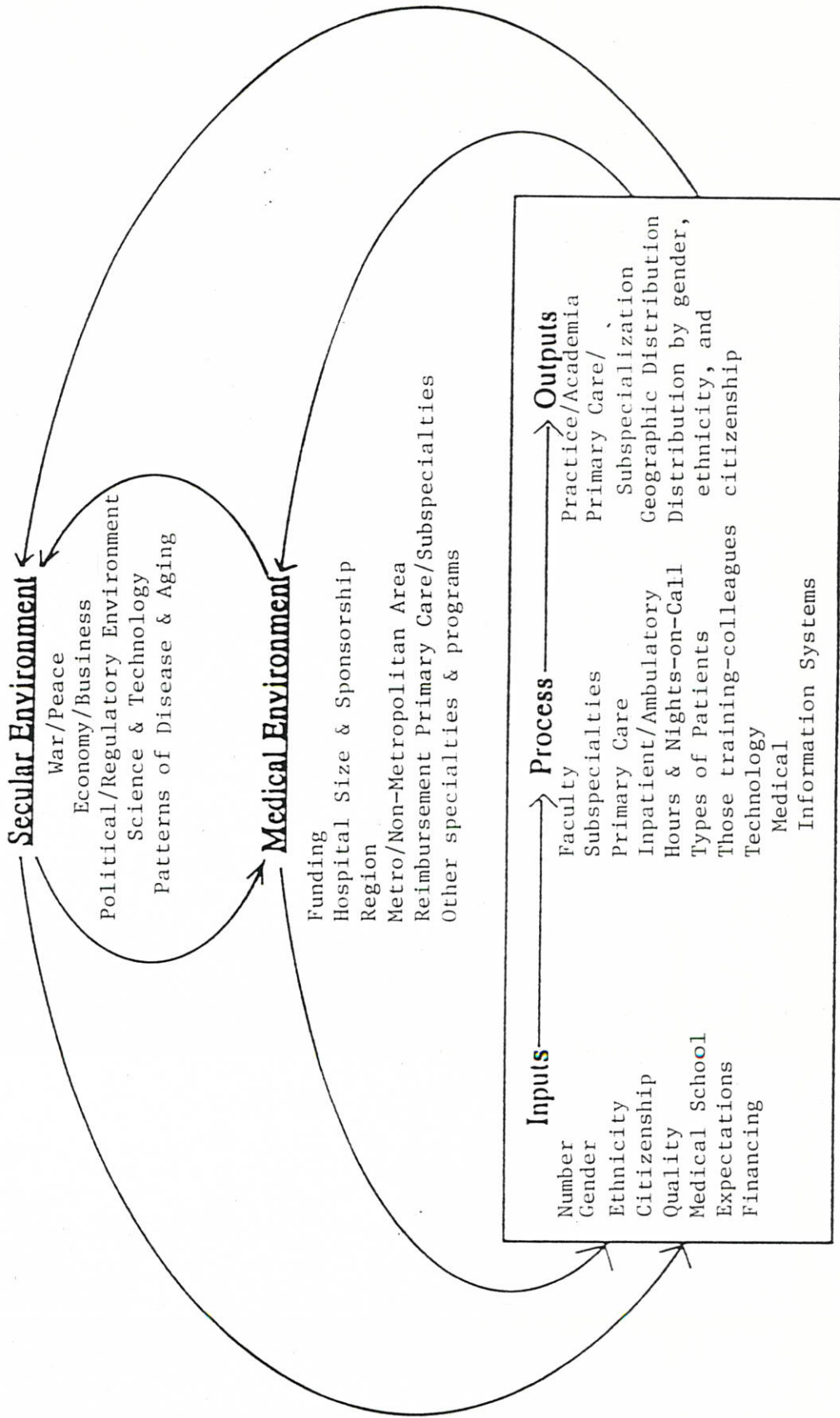
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A Systems Perspective of Graduate Training in Internal Medicine



National Study of Internal Medicine Manpower: XVII. Changes in the Characteristics of Internal Medicine Residents and Their Training Programs, 1988-1989

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The National Study of Internal Medicine Manpower (NaSimm) has been surveying program directors of internal medicine about their programs and residents for 13 years. The 1988-1989 survey results, when compared with the results for 1987-1988, show an increase in both the number of residency positions offered in internal medicine and the number of residents in internal medicine programs. Although the proportion of graduates from U.S. medical schools who choose internal medicine is not changing (34%), the proportion of U.S. medical school graduates who continue training in internal medicine after their first year is decreasing. The composition of the residents in internal medicine by medical school graduated is also changing. Almost 25% of the first-year residents (R1s) in internal medicine are now graduates of foreign medical schools (FMGs) compared with 14% in 1976. The proportion of first-year female residents in internal medicine has increased to 30%, whereas the proportion of both first-year blacks and Hispanics has remained constant at 5% each. In nearly 25% (109 of 440) of the residency programs, more than 50% of the R1s are FMGs. Hispanics, Asians, and blacks were found to be over-represented in the programs training larger proportions of FMGs. This over-representation is attributable, in part, to the fact that Hispanics and Asians may be FMGs. Training issues of concern to program directors continue to be the provision of ambulatory and primary care experiences and the scheduling of nights on call. The survey results show that many residency program directors have reported a reduction in the number of nights on call and an increase in the amount of time residents spend in ambulatory training.

The number of first-year residents (R1s) in internal medicine residency programs continued to grow in 1988-1989, and a larger proportion than ever before were graduates of foreign medical schools (FMGs). These results come from the most recent census of programs conducted by the National Study of Internal Medicine (NaSIMM) and comparisons with earlier studies conducted by NaSIMM since 1976 and cited by Andersen and colleagues (1). In this paper, we report trends in the programs and their residents over this 13-year period, compare programs having many FMGs with those having few, and examine the relative emphasis on outpatient and inpatient experiences for residents.

Methods

In July 1988, all residency programs in internal medicine accredited by the Accreditation Council for Graduate Medical Education were mailed questionnaires to be completed by the training program director. Nonrespondents were sent two follow-up mailings during the fall. Finally, those still not responding were contacted by phone and urged to cooperate. These efforts resulted in completed questionnaires from all but six programs, a 99% response rate. Numbers of residents in non-responding programs were estimated from the number of residents reported in those programs in the previous year. Class sizes were assumed to be the same as in the previous year, and the distribution of the characteristics of the residents was taken to be the same as that for the cohort in the previous year. Furthermore, first-year classes were assumed to be identical to the first-year classes of the previous year.

Residency Program Trends

Table 1 shows that the total number of residents in internal medicine increased to almost 20 000 in 1988-1989. The increase from the previous year (1987-1988) was 386 residents (2%). Almost the entire increase resulted from a gain in the number of first-year residents (R1s), from 7559 in 1987-1988 to 7873 in 1988-1989. Over the 13 years covered by NaSIMM, the total number of residents in training has increased by almost 4700 (Table 1). In the late 1970s and early 1980s, the increases were greater than they have been in recent years. Still, the number of residency positions offered in internal medicine continues to increase at a more rapid rate than in any other major specialty. From 1988 to 1989, the rate of increase in R1 positions in internal medicine exceeded those in family practice, pediatrics, and obstetrics-gynecology by 50% or more; in general surgery, there was a decrease in the number of positions offered (2). From 1983 to 1989, the number of R1 positions offered in internal medicine in the National

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	RESIDENTS	RESIDENTS	RESIDENTS	RESIDENTS	RESIDENTS	RESIDENTS	RESIDENTS	Programs	Size
	← n →								
1976-77	5810	4726	3963	606	80	15 185	418		36.3
1981-82	6817	5496	5022	532	134	18 001	429		42.0
1985-86	7433	5761	5524	522	64	19 304	434		44.5
1986-87	7495	5774	5610	577	112	19 568	436		44.9
1987-88	7559	5800	5586	523	22	19 490	441		44.2
1988-89	7873	5730	5646	587	40	19 876	440		45.2

Resident Matching Program increased by 19% compared with 4% in family practice, 5% in obstetrics-gynecology, and 15% in pediatrics (2). The number of R1 positions offered in general surgery actually declined by 2% during this 5-year period.

There are now 440 internal medicine residency programs in the United States and the average size is 45 residents. Between 1976 and 1988, the average size of internal medicine residency programs increased considerably (from 36.3 to 45.2 residents) and the number of programs increased moderately (from 418 to 440) (Table 1).

Table 2 shows that the proportion of graduates from U.S. medical schools who go on to internal medicine was about one third in 1988; this proportion has not changed much since NaSIMM began collecting data in 1976. What is changing, however, is the proportion of medical school graduates who continue training in internal medicine as second-year residents (R2s). This proportion declined from 29% of the medical school graduates in 1977 to 24% of the graduates in 1987. Increasing numbers are taking 1 year in internal medicine and are then switching to another specialty. Most of these residents go into the medical specialties of dermatology, neurology, and ophthalmology. However, many also enter other specialties, including anesthesiology, emergency medicine, physical medicine, nuclear medicine, diagnostic and therapeutic radiology, and psychiatry (1).

Whereas increasing numbers of R1s from internal medicine switch to other specialties, most R2s in internal medicine continue for a third year of residency. The continuation rate from the second to third year of residency has actually increased over time (Table 2). Thus, from the medical school class of 1977 there was a decline of 236 residents between the second and third years, whereas for the 1986 graduating class the drop from second to third year was only 114.

Table 3 shows that most R1s who switch out of internal medicine are in preliminary tracks—programs explicitly designed to provide 1 year of general internal medicine training before a resident moves into another specialty. In 1988, 21% of all R1s were in preliminary tracks, and this proportion appears to be increasing over time. Data from the National Resident Matching Program show that in 1979, 13% of all R1 positions offered in internal medicine were preliminary, whereas this percent increased to 23% in 1989 (3).

Most internal medicine residents are in categorical programs, which are designed to provide a full 3 years of training (71% of R1s and 90% of R2s) (Table 3). However, almost 10% of R2s and third-year residents (R3s) are in specialized primary care (7%) or combined medicine-pediatric programs (2%). These programs began in the late 1970s and early 1980s, respectively. Since their inception, they have grown considerably in number of programs and residents in training, although in the most recent years, medicine-pediatrics programs

Table 2. Graduates from U.S. Medical Schools Who Go On to Internal Medicine Residency Training for Selected Years (1977-1988)*

Year of Graduation	Graduates from U.S. Medical Schools†					
	With MD Degree‡	With DO Degree§	Total	Who Become R1s	Who Become R2s	Who Become R3s
	← n →			← n(%) ¶ →		
1977	13 607	971	14 578	5142 (35)	4229 (29)	3993 (27)
1982	15 985	1317	17 302	5590 (32)	4372 (25)	4286 (25)
1986	16 117	1555	17 672	6000 (34)	4454 (25)	4342 (25)
1987	15 830	1579	17 409	5837 (34)	4198 (24)	NA
1988	15 919	1595	17 514	5995 (34)	NA	NA

* R1 = first-year resident; R2 = second-year resident; R3 = third-year resident; NA = not available.

† The data on MD graduates were obtained from the American Association of Medical Colleges.

‡ The data on DO graduates were obtained from the American Osteopathic Association.

§ Total = MD plus DO graduates.

|| Graduates of Canadian medical schools are included in the R1, R2, and R3 figures, although they are not included in the U.S. medical school counts.

¶ Percentage of total.

Table 3. Residency Program Tracks by Year of Residency, 1988-1989

Tracks	First-Year Residents	Second-Year Residents	Third-Year Residents	Fourth-Year Residents	Fifth-Year Residents	Total
	← n(%) →					
Categorical	5591 (71)	5167 (90)	5125 (91)	518 (88)	35 (87)	16 436 (83)
Primary care	457 (6)	421 (7)	379 (7)	22 (4)	5 (13)	1284 (6)
Medicine-pediatrics	159 (2)	136 (2)	131 (2)	43 (7)	0 (0)	469 (2)
Preliminary	1638 (21)	1 (0)	0 (0)	0 (0)	0 (0)	1639 (8)
Total	7873 (100)	5730 (100)	5646 (100)	587 (100)	40 (100)	19 876* (100)

* Total includes 48 residents in some "other" track.

have filled less than 70% of the positions offered through the National Resident Matching Program (3).

Who Are the Residents?

Almost 25% of the R1s in internal medicine now are FMGs (Table 4). The proportion of R1s who graduated from U.S. medical schools (USMGs) declined steadily from 86% in 1976 to 76% in 1988. Two thirds of FMGs are not U.S. citizens (alien foreign medical graduates [AFMGs]); the remaining third of FMGs are U.S. citizens (USFMGs). During the 13 years covered by NaSIMM, the proportion of residents who are AFMGs has increased from 10% to 16%, with most of this increase taking place in the past 2 years. From 1976 to 1988, the proportion of R1s who were USFMGs increased from 4% to 8%. This proportion peaked at 10% in 1985 but has declined since then.

The proportion of R1s in internal medicine who are women continues to increase and reached 30% with the entering class of 1988-1989 (Table 4). Internal medicine is not unique among specialties, as the percentage of women in all residency programs has been increasing. In 1978-1979, 19% of all residents were women; by 1987-1988, 28% of all trainees were women (4). Internal medicine has about the same proportion of female residents as family practice (29%); a smaller proportion than pediatrics (52%), obstetrics-gynecology (46%), and psychiatry (41%); but a larger proportion than general surgery (13%) (4).

Blacks and Hispanics each accounted for 5% of all R1s in internal medicine in 1988-1989, and this proportion has remained constant throughout the 1980s (Table 4). Minorities account for approximately the same proportion of residents for all specialties combined as they do for internal medicine: 5% are black and 5% are Hispanic (4).

What Programs Train Foreign Medical Graduates?

Table 5 compares residency programs having 50% or more FMGs with those having smaller proportions of FMGs. In almost 25% (109 of 440) of programs, more than 50% of the R1s are FMGs. These programs have substantially higher proportions of Hispanics (9%) or Asians (18%) than do programs with smaller proportions of FMGs. Blacks are also over-represented in programs with large proportions of FMGs (8%).

One reason that programs with high proportions of FMGs also have high proportions of Hispanic or Asian

residents is that many of the Hispanics and Asians are FMGs. In 1988-1989, 46% of the Hispanic and 64% of the Asian residents in internal medicine were FMGs. Only 14% of white and black residents were FMGs. Blacks and Hispanics who are USMGs account for 9% of all R1s in programs that also train FMGs but for only 6% of R1s in programs with no FMGs. In contrast, few Asian USMGs are in programs training FMGs (estimated from the NaSIMM survey and unpublished data from the American Medical Association [AMA] survey of residency programs).

Table 5 shows that programs training many FMGs differ substantially from other programs in ways other than the ethnic composition of their residents. They have smaller proportions of female residents. Their administrative hospitals are unlikely to be principal affiliates of medical schools. Such programs are more likely to be in nongovernmental hospitals and less likely to be in very large ones (700 beds or more). They are over-represented in large metropolitan areas and the northeast and seldom found in the west. Finally, the average size of their R1 class is smaller than that of programs with fewer or no FMGs.

Thus far we have examined the training of all FMGs combined (AFMGs plus USFMGs). There is, however, another question: Are the programs that train USFMGs the same ones that train AFMGs? The answer appears to be sometimes yes but more often no. The correlation between the number of AFMGs and USFMGs in a program is 0.21. Although this correlation is significant ($P < 0.01$), it is far from a perfect correlation. Of the 109 residency programs with 50% or more FMGs, there are 66 (61%) in which more than half of the students are AFMGs. These are clearly AFMG-dominated programs. Conversely, in 27 (25%) of these programs, more than 50% of the R1s are USFMGs. These are clearly USFMG-dominated programs. That leaves only 16 (15%) FMG-dominated programs where the AFMGs and USFMGs must be added together for FMGs to comprise more than one half of the trainees. Thus, to a large extent, different programs are training AFMGs and USFMGs.

We compared the 66 AFMG-dominated programs with the 27 USFMG-dominated programs regarding several characteristics (Table 5). Although the two program types are similar in many respects, they do differ in a few ways. The USFMG programs, when compared with AFMG programs, are more likely to be in hospitals with religious sponsorship (30% compared with 17%); less

metropolitan areas with populations of 1 million or more (59% compared with 73%); and less likely to be in the north-central region (7% compared with 30%). It should be noted that both types of programs are found most often in the northeast, but this is more the case for USFMG programs (70%) than for the AFMG programs (53%). Overall, we have noted substantial differences between the programs mainly training USMGs and a sizable number of programs (109) composed mostly of FMGs. Among the latter, some programs have many AFMGs, whereas others have a large proportion of USFMGs; however, these two types of programs differ in some respects from each other as well.

Components of Residents' Training

The NaSIMM questionnaire requests residency training program directors to list concerns they would like to see included in the survey. Foremost among training issues mentioned in recent years were providing ambulatory and primary care experiences and scheduling nights on call.

According to the most recent NaSIMM survey, 18% of R1s' time was spent in ambulatory care training (Table 6). This finding suggests a considerable increase from the previous year when ambulatory care experiences were reported to account for 13% of the residents' time (1).

Most of a resident's ambulatory care experience is gained in a hospital clinic or in a clinic adjacent to a hospital. More than 80% of the ambulatory training for R1s takes place in clinics closely associated with hospitals (Table 6). Other sites of ambulatory care more removed from hospitals, such as physicians' private offices and health maintenance organizations (HMOs), are responsible for a large portion of all ambulatory care provided in the United States. Thus far, these sites have provided little of the training experience of internal medicine residents. The largest category for ambulatory experience that is not some type of hospital clinic is the "other" category (7%). In fact, most of the experience in this category occurs in the emergency room, which, of course, is also very much hospital-related.

We examined the characteristics of residency training

ambulatory care experience according to program size, hospital size, or the kind of medical school affiliation (principal, major, or other). However, some differences were seen between programs providing most training experiences in hospital-affiliated clinics and those using other ambulatory settings. For example, the kinds of programs devoting the highest percentage of all ambulatory training time to clinics in the hospital or clinics adjacent to the hospital included those whose administering hospital is the principal teaching hospital of a medical school (89%) and those sponsored by the military, Veterans Administration, or state or local government (91%)—compared with 83% for all residency programs. Conversely, proportionately more ambulatory training time in physician offices and HMOs is found in programs in hospitals that are not the principal hospitals of a medical school, those owned by churches and other nongovernmental agencies, and in smaller residency programs (20 or fewer residents). More than 80% of all training experiences in HMOs were provided by residency programs on the west coast. Ninety-seven percent of all the training programs report no HMO training experience for their R1s. Six programs report that their R1s spend 50% or more of their time in ambulatory care in an HMO. These programs are all located in California, and five are part of the Kaiser system.

Changes in call schedule was the single concern suggested most by program directors for further study by NaSIMM. We asked program directors to report changes over the past 2 years in the scheduling of nights on call as well as inpatient, outpatient, and subspecialty services. Many programs (41.5%) have reduced nights on call, whereas very few have increased them (3.3%). Also, 22.5% of programs have reduced the number of scheduled hours for inpatient services, and practically none (2.2%) have increased these hours. Conversely, most programs (59.5%) are scheduling more training time for outpatient care than they did 2 years ago.

Time devoted to subspecialty training has not changed for most programs (80.3%), and the remaining programs (19.7%) are evenly split with half reporting an increase and half, a decrease. Subspecialty training is largely provided to residents through the subspecialty

Table 4. First-Year Residents in Internal Medicine by Medical School Attended, Gender, and Ethnicity for Selected Years*

Year	Total†	Medical School Attended, n(%)‡			Gender, n(%)‡		Ethnicity, n(%)‡		
		USMG	USFMG	AFMG	Male	Female	Black	Hispanic	Other
1976-77	5810 (100)	4988 (86)	219 (4)	603 (10)	NA	NA	NA	NA	NA
1981-82	6817 (100)	5402 (79)	646 (9)	769 (11)	5239 (77)	1578 (23)	333 (5)	378 (6)	5969 (89)
1985-86	7433 (100)	5933 (80)	751 (10)	750 (10)	5392 (73)	2041 (27)	NA	NA	NA
1986-87	7495 (100)	6022 (80)	643 (9)	830 (11)	5403 (72)	2092 (28)	352 (5)	383 (5)	6734 (90)
1987-88	7559 (100)	5837 (77)	671 (9)	1051 (14)	5366 (71)	2193 (29)	348 (5)	385 (5)	6481 (90)
1988-89	7873 (100)	5995 (76)	608 (8)	1270 (16)	5527 (70)	2346 (30)	433 (5)	425 (5)	7015 (89)

* USMG = graduates of U.S. or Canadian medical schools; USFMG = U.S. or Canadian citizens who graduated from foreign medical schools; AFMG = foreign graduates of foreign medical schools; NA = not available.

† Subgroups may not sum to total due to non-response on subgroup item.

‡ Percent of total for this subgroup.

Table 5. Characteristics of Internal Medicine Residency Programs According to the Proportion of First-Year Residents (R1s) Who Are Foreign Medical Graduates (FMGs), 1988-89

Program Characteristic	Programs			All
	With No R1s Who Are FMGs	With Less than 50% R1s Who Are FMGs	With 50% or More R1s Who Are FMGs	
Ethnicity of R1s, %				
Black	4	6	8	5
Hispanic	2	6	9	5
White	86	81	65	79
Asian or Pacific islander	8	7	18	10
Gender of R1s, %				
Male	66	70	77	71
Female	34	30	23	29
Administrative base hospital affiliation with medical school, %				
Principal	29	29	2	22
Major	56	56	57	56
Other	15	14	41	21
Administrative base hospital sponsorship, %				
Military	10	0	0	4
Veterans Administration	2	5	3	3
Other, government	20	28	17	23
Religious	15	15	20	16
Other, nongovernment	54	52	60	55
Administrative base hospital bed size, %				
400 or less	26	33	29	29
401-500	20	17	32	22
501-700	29	23	25	26
More than 700	26	26	14	23
Program locality, %				
SMSA* 1 million or more	54	57	69	59
Medium metropolitan	33	32	25	31
Small or nonmetropolitan	13	11	6	11
Program region, %				
Northeast	25	36	60	37
North-central	20	24	26	23
South	28	26	11	23
West	27	12	1	15
Puerto Rico	1	3	3	2
Mean program size, <i>n</i>	17.6	20.0	14.5	17.8
Total, %	100	100	100	100
Total programs, <i>n</i>	164	167	109	440
Total R1s, <i>n</i>	2894	3395	1584	7873

* SMSA = standard metropolitan statistical area.

fellowship training programs. The 1988-1989 NaSIMM census of fellowship programs in internal medicine asked about the rotation of residents through the subspecialties. Ninety-five percent of the responding fellowship programs reported that internal medicine residents rotated through their service. Most of the residents' time in subspecialty training is devoted to the inpatient service (77%), leaving about one fourth (23%) of their time for ambulatory service.

Thus, we see some shifts in residents' training from inpatient to ambulatory care, although inpatient care continues to dominate. Most of the ambulatory experience continues to occur in hospital-based clinics. Those programs providing alternative types of ambulatory experiences (not hospital-based) do differ from other programs in terms of their sponsorship and location. Nights on call continue to decline, but the emphasis on subspecialty training appears to have remained constant in

recent years. Most subspecialty training continues to take place on the inpatient service.

Discussion

Despite concerns about the number of physicians practicing and being trained and the quality of the applicants (5-7), internal medicine residency programs continue to increase the number of residency positions being offered. There is no uniform agreement that too many physicians are being trained (8-10). It does seem apparent, however, that hospitals' judged need for residents to provide patient care has had a major influence on the number of residents trained and the size of the training programs. Whether this is a wise policy continues to be debated (5, 7, 11). It is also clear that internal medicine is somewhat of an outlier among the major specialties with this policy of growth. What is the basis

Service	Time, %
Inpatient	81.7
Ambulatory	18.3
Ambulatory clinic in a hospital	13.0 (70.9)*
Hospital-affiliated clinic	
Adjacent to a hospital	2.3 (12.5)
Hospital-affiliated clinic	
away from a hospital	0.7 (3.9)
Physician's private office	0.7 (4.0)
Health maintenance	
organization	0.2 (1.2)
Public service clinic†	0.1 (0.5)
Other (including emergency room)	1.3 (7.0)
Total	100 (100.0)

* Percentages in parentheses show proportion of all ambulatory training.

† Includes community, free, and county clinics.

for this differential behavior and whose interest does it serve?

Because the pool of USMGs is not growing and the proportion of those USMGs choosing internal medicine is constant, an increasing proportion of the positions is being filled by FMGs. Some believe that this trend is detrimental to patient care and the field of internal medicine. Graettinger (3), for example, has documented the declining proportion of residency positions in internal medicine filled by USMGs using National Resident Matching Program data and points to the "excessive number of positions offered" as a contributing factor. Others contend that the evidence about inferior quality of FMGs is not convincing (11). Another pragmatic concern is the effect on patient care programs of communities and hospitals currently served by large numbers of FMG residents should the supply of FMGs be eliminated or substantially reduced (12, 13).

A significant proportion of the training programs depends heavily on FMGs, and these programs have quite different characteristics from programs with few FMGs. They include more minorities who are USMGs and fewer women. They are more likely to be found in large metropolitan areas and in the northeast. These differences emphasize that changes in policy about the training of FMGs are likely to require major adjustments in some programs and some locations while having less effect on others.

An increasing proportion of residents in internal medicine are going into other specialties rather than completing training in internal medicine. Many of these residents are in preliminary programs specifically designed to provide 1 year of internal medicine training as a basis for training in another specialty. Others, however, are apparently terminating previous plans for internal medicine training in order to seek a new specialty program. These apparent trends and reasons for residents leaving internal medicine should be carefully monitored.

The NaSIMM survey suggests that ambulatory care is receiving increasing emphasis in residency training programs. Such emphasis may be a response to concerns that past residency experiences did not provide sufficient exposure to primary care and ambulatory patients

training must be in the ambulatory care setting" (15). However, so far most of the experience in ambulatory care appears to be gained in hospital clinics and emergency rooms. With the exception of a few programs, practically no training is done in HMOs and little is done in physicians' offices where most ambulatory care is actually provided. Although there are certainly barriers to overcome in terms of organizing and financing this ambulatory care training (16, 17), doing so would be in keeping with the aim to expose most residents to more of the kinds of patients and conditions they will subsequently face in their practices. Further, some programs are now accomplishing this purpose. It might also be noted that the programs providing the most varied ambulatory care experiences are not necessarily those usually considered "leaders in the field." For example, more varied experiences seem to be provided by smaller programs located in hospitals that are not the primary teaching hospitals affiliated with medical schools. New direction for ambulatory training may well emerge from varied sources.

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TRAINING IN INTERNAL MEDICINE:
REFLECTIONS FROM FIFTY INTERVIEWS

Talk Given By Claire Kohrman
to the
Association of Professors in Medicine
February, 1991

Good morning. I am here today, as you are, because I am interested in the training of physicians. I have been ever since many years ago I threw my lot in with an eighteen year old pre med student my first day of college. While I did not choose medicine as a career myself, (few women did in the early 50's) I have been an intimate observer of the details of medical education and academic medicine throughout my adult (and a fair amount of my adolescent) life. Those credentials gave me the interest and early data, and my training in sociology gave me the skills and the audacity to study and report to you on your own profession and specialty.

I have been, for almost ten years now, at the University of Chicago [slide--photograph] where we have been gathering data on training in internal medicine with the NaSIMM surveys (National Study of Internal Medicine Manpower). Dr. Al Tarlov began the study in 1976 when he was at the University of Chicago. We now have 14 years of data for virtually all internal medicine residency and fellowship programs. Two and one half years ago, not long after what you now call "Black Tuesday," we spoke with Jerry Levey about a re-analysis of the NaSIMM data to find the patterns of change over time. I said that I would be particularly interested in the study if we could, as part of the project, interview leadership and observers throughout internal medicine about the original goals and the subsequent development of training programs. While the data from the original NaSIMM study was largely focused on issues of manpower, in the recent years the project has expanded to include the changing nature of the training programs as well as the numbers trained, i.e. residents' work load, the amount and place of ambulatory training, the nature of the applicants to programs--issues that I understand you addressed last year at your retreat in Florida. I will conclude with some limited reference to these newest data; you will find them more fully reflected in your packet. Let me now call your attention to that packet.

In addition to the NaSIMM data, you will find background materials on the interview portion of the study--the list of those whom I have interviewed to date, an interview guide, and a time line we developed to provide an historical frame of reference for the development of internal medicine and its training programs. I want to emphasize that all of this is in process, and I am here in part this morning to seek your additions, modifications, and corrections. While we could not interview each of you, your contribution will have an important role in our synthesis for the upcoming book. So please note (and this is tough to take early in the morning, but VERY IMPORTANT, at the end of the packet there is a small but CRUCIAL SURVEY to fill out. [slide--cartoon])

Let me take a minute to tell you a little about our approach to this project, and explain whom and how we interviewed. Because we wanted a fresh look at training in internal medicine from the perspective of the profession itself (Yourself!), at the start we avoided a predetermined list of interviewees, we avoided an hypothesis, and we avoided tightly structured questions. In the jargon of my trade this is called grounded theory, a method which draws on the data to determine the analytic structure, in contrast to developing an analytic structure and gathering data to fill it. (The traditional NaSIMM questionnaire is characteristic of the second type.) We began with a small initial list of recognized leaders in academic internal medicine and then, in each interview, I asked for other recommendations. We then followed up on recommendations, but selected among them to widen our network, to reflect a range of subspecialties, to reflect different regions of the country, and a range of dates of training, that is, training cohorts. This map [slide] reflects the regional perspectives brought by those interviewed from both their training and their principle position or positions. While there is a certain inevitable clustering of regions, three-fifths of these interviews were not in the Northeast. This slide [slide--chart] shows other characteristics of those interviewed. First, the cohorts, by decades, of internists interviewed, (their dates of graduation from medical school ranged from 1921 to 1990). Of the internists interviewed, about 1/2 were boarded generalists and 1/2 subspecialists; some of these were generalists because their training was before subspecialty boards were *de rigueur* for academics and highly esteemed internists, and a number are fellowship-trained in General Internal Medicine. The other 20% of the interviews were with those still in residency, in public policy, or in other specialties. An important thing I'd like you to know about the presentation of the interviews: In any place I quote by name, I asked explicit permission.

You have seen in your packet the long list of esteemed internists and colleagues associated with internal medicine with whom I have been speaking during the last two years--years of struggle in all of medicine. The interviews suggest, though, that just as internists are seen as the quintessential physicians, internists (you) are bearing the quintessential brunt of the strife in the profession--and perhaps feeling it most intensely. You are all familiar, I've been told in these interviews, with the problems that afflict you and your training programs: AIDS, ageing, an ailing economy and alienated medical students; just to begin with the A's. Furthermore, you meet together and speak together and all read the *Annals of Internal Medicine*. So what should I, a sociologist, reflect to you, the professors of Internal Medicine, about training now that I have almost completed this remarkable series of interviews? Of course, I can not give you a prescription but I can give you the varied perspectives I have heard so that you might place your own within it. Indeed, the perspectives vary widely. I will try to reflect this range of views, and at the same time, show what I found to be within the diversity, a constancy of interests, of purpose and of values.

In an attempt to condense for you the richness of 60 hours of taped interviews, I have chosen five themes which emerged from the words of the most senior professors as well as the most junior residents throughout the country from west to east, and from the most elite private institutions to our land-grant universities. The themes reflect the powerful dynamics of internal medicine as it was explained to me and each theme hold both problems and promise, hazards and hopes.

I will discuss these themes as **Mentors, History, Mystery, Money, and Technology.** [slide--chart]

Why do I begin with Mentors? History seems a more intuitive choice and "History, Mystery and Mentors etc." is much more euphonious for such a talk, but the scientist in me does not permit it. Mentors must be first because, when I say at the beginning of an interview, "Please tell me about your own training and why you chose Internal Medicine," "Mentors" are the most frequent and spontaneous explanation. My interviews began with Dr. Walter Palmer, emeritus professor at the University of Chicago, honored in 1986 by the ABIM on his 90th birthday. He told me of his own training and decision to go into internal medicine. He, like others whom I would interview in the subsequent 2 years, had planned originally to be a general practitioner--in his case a "country doctor." But when he was a medical student at Rush medical school in Chicago just before 1920, he met Dr. Bertram Sippy at Cook County Hospital, "a man," he said "to whom I became completely devoted....He was one of the great men in the field of gastroenterology, though he would have never used that term. He considered himself a doctor." The young Dr. Palmer asked Dr. Sippy for permission to train with him at Rush and Cook County Hospital, and, Dr. Palmer told me, "the years on the Sippy service determined my career."

In Pittsburgh, Dr. Jack Myers told me of a similar experience when he was a medical student at Stanford. "It was because of Dr. Arthur Bloomfield who had trained with Osler at Hopkins and then moved to Stanford to head Medicine that I went into internal medicine instead of surgery or something else. He was a very impressive man--at least to me anyhow-- the old role model situation...." [slide--picture] Here are Osler and other mentors at Hopkins. And Dr. Eugene Stead spoke with feeling about Soma Weiss who guided his early career: "the most capable man I have ever known in medicine." Dr. Stead also emphasized the satisfaction of being a mentor. He said: "I modeled myself after my own chiefs and enjoyed the free hand to personally help and mold my residents."

His comment brought to my attention an important point for a session on curriculum. In these early days remembered with such warmth, mentors individually molded the training of their small numbers of apprentices. I asked Dr. Stead and other senior faculty if they knew of any institutional or organizational planning for housestaff training or for deciding how many should be trained. He said, "No. I guess each of us believed in our own selves". In fact, he said (and others echoed) that not until Al Tarlov's study did Internal Medicine, as a group (in sharp

contrast to Surgery) consider the number of trainees as an issue for discussion.

Mentors in the early days also served as the ultimate evaluators and credentialing bodies. Dr. Myers tells this story about Osler: Osler at Hopkins would keep people in his residency program until they were capable of a senior faculty practice at some other medical school. And to the young resident Dr. Myers, Soma Weiss had said, "it would be best for you to have several years here as chief resident." Dr. Myers' residency was interrupted, however, by the second world war

Such interruptions, I would find, would be a large part of the stories told to me. [slide--chart] History has been a leading theme in the unfolding drama of internal medicine. Of course I knew that the times of war had yielded new surgical techniques, but I had not anticipated the extent to which I would find, from these interviews, the specialty of Internal medicine itself shaped by events and social movements quite outside of the medical domain. Drs. Myers, Beeson, Henry, and Stead all spoke of the pivotal role that the second world war played in the development of their careers. Paul Beeson and Jack Myers interrupted their training to go with the Harvard Unit to set up a 1000-bed base hospital for the Allied Forces in Britain. Eugene Stead did not go, at the request of Soma Weiss. [slide--photograph] (This photograph is a prize of Dr. Myers which he recently had duplicated for Dr. Stead and kindly lent me for this presentation. It shows the doctors from the Harvard training programs at Harvard just before they went together to England.) Joel Howell, physician and historian, writing for the 50th anniversary of the ABIM, puts these stories in context. He described how specialization developed in WWII to parallel the military hierarchy. If *board-certified*, a specialist became a Captain rather than a First Lieutenant. Examiners from the ABIM even went to Europe to offer certifying exams to officers on active duty, including Dr. Myers who was given his exam, he reports, by the visiting chairman of the ABIM.

Furthermore, it was the support of war-time science under the Office of Scientific Research and Development and its Committee on Medical Research that laid the foundation for the NIH research contract granting system that would follow with its incomparable impact on training in internal medicine. NIH grants went from \$180,000 in 1945 to over \$8 million by 1947 and by the mid-1960s over \$700 million. Physicians returning from the WWII, exposed to new techniques, and having observed the preferred status of the specialist sought training and certification in droves.

While scientists and clinicians participated actively in this growth and specialization, they *did not precipitate it*. Rather, the biographies of those training in those days intersected an historical moment when growth seemed unlimitable. Paul Beeson's reflections on his time at Yale from 1952 to 1965 characterize that historical moment. He said: "**this was post war.....a very yeasty time for medicine. The government was just pushing money at us. Congress was saying, "don't you want another hundred million for medical researchThe time I went to Yale was a**

lucky time. It was easy to expand the department, to recruit good people, and get laboratories built and get salaries for faculty...In the years I was at Yale the department increased in full time staff from 15 to 65. I thought that was tremendous. Now, the department is 250."

That historic post-war moment which amazed Paul Beeson and his contemporaries as they rode its crest became the baseline expectation for the many young scientists and clinicians who trained under them in the 1950s.

As I have listened to and analyzed the interviews I have come to think that perhaps the most powerful aspect of history for individual lives is the expectation it creates.

After the 50's, there was yet another way in which war powerfully, though perhaps more indirectly, affected the course of training in internal medicine, particularly in recent times. This effect, the interviews suggest, is only beginning to be felt in academic medicine. Those whom I interviewed who graduated from medical school in the late 60s and early 70s trained not in a period of comfort or confidence like the 50's but, rather, through a period of social unrest and uncertainty during the Viet Nam War. A number of these physicians are now academics in internal medicine with increasingly significant responsibilities in the field.

Many of them trained at the NIH in the early 1970s, staying at home in the laboratory instead of going to Southeast Asia. Some, in their interviews, even referred to themselves as the "Yellow Berets." Their interviews suggest that they still consider each other as colleagues and resources in the complex future of academic medicine. And its complexity and discomfort does not surprise them, but rather, it seems to challenge them. Some of them focus on less traditional careers in internal medicine--for example, general internal medicine including clinical epidemiology, geriatrics, or even medical economics; others have excelled in traditional subspecialty areas; cardiology and hematology /oncology.

One must also note, at least briefly, that the historical social movements of the sixties and seventies--first for civil rights and later for women's liberation--added new challenges to medicine and also changed its profile. Medical schools participated in affirmative action programs with mixed success. In my interviews no subject was more universally puzzling and less likely to be raised spontaneously by those interviewed than the effort to increase minority participation in medicine. I will not dwell on our observations and data on minorities today, because you will have a separate plenary session on that tomorrow.

Women, on the other hand, have entered medicine in rising numbers which will inevitably change it in ways imagined but not yet known. Bernadine Healy and Suzanne Fletcher applauded the entry of women into internal medicine, but they both cautioned that women must not only enter

medicine but must also prepare to take their share of leadership roles in academic medicine at this historic moment.

These particular historic moments in medicine will not be repeated. Each cohort must deal with something new, and in its own way.

And what does mystery offer? MYSTERY [slide] takes center stage in this selection of themes because it includes what I have come to see as the central unifying theme among internists--it is the commitment to understanding a problem, to getting to the intellectual core of an issue, to testing a hypothesis, to pursuing a phenomenon not yet understood. Most of those I interviewed discussed this interest in solving mysteries in terms of "making a diagnosis--a correct diagnosis" based, usually, on a series of "clues." This theme was almost as ubiquitous as the theme of "mentors," and the two themes were always closely associated. For example, Dr. Eugene Braunwald said, very early in our interview, "I chose internal medicine...; I never considered any other field from the time I started medical school. I guess my own interest in medical school was initially in diagnosis. There was a species of physician, now gone, who were called diagnosticians. I guess these would be internists at a higher level....That higher level, in the era around the 50's, was to solve diagnostic problems. And I sort of imagined that a diagnostician was much like a sleuth; in New York City at that time there were a number of very prominent people at each of the major teaching hospitals, professors who had large practices and they were sort of the last word. And that is what I aimed for."

Accounts of challenging mysteries, successful diagnoses, and the role that these successes have in the teaching and learning of house officers, were a particularly interesting part of the interview process for me.

For example, Dr. Jack Myers told me that during his wartime stay in England, he was called to the field hospital to consult on an unexplainable illness of a soldier suffering from Stokes-Adams attacks. He deduced from the soldier's placement on the ward that he must have had an earlier surgical problem of some kind-- thus, Dr. Myers told me, he sniffed out the fact that the soldier had come in with paronychia and so he was able to diagnose cutaneous diphtheria. Dr. Myers explained that (and these are his words): "Unfortunately the soldier's heart muscle was ruined and he died, but at least we knew what was going on. That gave intellectual satisfaction to the people taking care of him."

This category I have called MYSTERY includes not only the satisfaction of clinical discovery but also the internists' excitement and excellence in scientific investigation--that delving deep into unknown territories of bench research. But for our purposes today as educators, we must note an important paradox: the basic research of internal medicine has since the early 50s been successful to degrees one could not have imagined. For example, Holly Smith's comment is characteristic: "you can read the DNA code like a book, whereas in my day

you were not very sure what DNA did." And such research has brought great esteem to the specialty and those who did the research. It has encouraged academics to focus on the laboratory. But the laboratory and its excellence have not been easily visible to students and young residents, and the faculty have not served as role models. Steve Schroeder noted, contrasting internal medicine with surgery, that, for example, in surgery the progress of the recent decades have been technical--all surgeons, the most esteemed among them, do surgery. This brings them in constant contact with patients and with students. Often however, the most esteemed internists have excelled in science--clinically applied science--but nonetheless not a science that brings them into many daily hours of contact with patients and students.

And now the painful passage from Mystery to Money. [slide--chart] When most of us first thought of medicine as a profession, money was virtually not discussed in polite professional company. The distinction between "business" and "profession" was rigidly adhered to. But now the explicit issue of money has pushed its way into the magic medical circle. I will touch briefly on four aspects. First, the nostalgic--the days when money seemed unimportant; residents did not expect it and didn't seem to need it. Eugene Stead described this period as his "seven years in a white suit. Food, lodging and laundry provided. No worries outside the hospital: no wife; no children." Holly Smith says that he also lived like his fellow residents "in the hospital, paid by room, board and \$25. And if you wanted to go see the girls at Wellesley, you sold a pint of blood for \$25--doubled your income."

But after nostalgia, those interviewed worried about the rising student and resident debt and its pressures against selecting medicine as a career or, once in medicine, for selecting a lucrative subspecialty. Holly Smith again noted: "Society speaks to young people in medicine in ambivalent terms: 'Do not go into (overcrowded) subspecialties where you are not needed; go into primary care, please.' And then, with a slightly different but more insistent voice, 'If you do as we say, we are going to penalize you...if you ignore our advice, we are going to reward you in income, perquisites and status.'"

A third way in which money presented itself in the interviews about training in internal medicine was in the discussion of the impact of private foundations and public granting agencies on the shape and direction of internal medicine. I have already mentioned the NIH grants; but in addition the benevolent touch of the Commonwealth Foundation, RWJF, Kaiser Foundation, and the Macy, Markel, and Mellon funds has also left a deep imprint; those interviewed particularly cited the recent development of General Internal Medicine.

Fourth, and finally, the painful pressure of money in the academic hospital setting. I am told that it weakens hospital-medical staff relations, pressures faculty to produce more income for the department and hospital, and creates different classes of faculty largely on the basis of procedures and technology. All of these diminish the teaching environment.

Holly Smith, again, observes that "Only in medicine do universities run a major industry; UCSF is now [We spoke a year ago] the largest non-government employer in San Francisco." He continued, "The pressure to provide service now causes residents to be...the stoop labor of internal medicine." And he adds that the external economic pressures which have changed the profile of in-patients have created what he calls a "theater of thanatology."

But, while he and other senior physicians trained in the late 40's or earlier reminisce about a different era, training at what he calls "a more leisurely pace," most do not seem critical of the irritable housestaff or beleaguered chairmen and faculty. Instead, they say, they feel lucky to have passed through internal medicine at a golden moment and they are sympathetic with those caught in the economic crossfire now.

There is no subject which evokes greater ambivalence in Internal Medicine than Technology. [slide--chart] It is both peril and promise. Ever more amazing technologies for diagnosis and treatment, for example in cardiology and gastroenterology, is a source of greatest pride and fascination. But those I interviewed said that the challenge that comes with technology is divisive to Internal Medicine and its training programs. While internists are conceptually committed to the generalist physician, sophisticated technologies have intensified subspecialization; and, as Steve Schroeder explains, it is getting worse. Those trained in the 60's, he says, were even then already being trained largely by subspecialists but, "in those days, subspecialists were better grounded as generalists because technology had not developed so much and the hospital was a much more leisurely place." But the worsening seems inevitable because, as Schroeder continues, "Internal Medicine is such an intellectual field that it's very important to be master of something and you have to differentiate in order to achieve that mastery."

That very interest in mastery has also led to increasingly sophisticated and effective diagnostic tests. This substitution of technology for the traditional diagnostic process, while clinically efficient, has distorted medical education in two most fundamental ways. In our interview, Dr. Norton Greenberger called it "double jeopardy": Both the relationship between the doctor and patient and the relationship between the doctor and student are seriously weakened. Time and again, in interviews with senior internists, they recalled important moments when, presented with a question, their professor or mentor would answer "Let's go see the patient." Yet, today in the hospital, emphasis on test results and treatment protocols has led to, again quoting Nortie Greenberger--"board rounds instead of ward rounds". While in an earlier section we've noted that economic pressures have forced residents into service at the expense of education, it seem also that in the hospital there is little else for the resident to do. The diagnostic interaction with the patient's illness is outside the hospital, so the in-house resident is in touch with the patient only to administer treatment. The differential diagnosis--the history and physical examination and solving of the mystery, often with high-tech testing, occurs outside of the hospital before the patient is admitted.

An area of technology which has developed more unevenly in medicine and medical education is computer science. While Harrison's textbook for many years has acknowledged the computer's potential in medicine, and some internists like Dr. Myers started early to develop data bases, physicians in general continue to be cautious but in medicine, as in other societal institutions, computers are gaining acceptance. [slide--cartoon]

While issues of money and technology have changed the hospital environment, the mysteries are still there to be solved and scientific technology makes it more exciting than ever, but my interviews suggest that teaching programs must take the responsibility to manage the educational process.

While, almost by chance, earlier in this century the inpatient hospital setting was very well suited to the training of physicians, the setting has changed, and so the educational plan or curriculum must also change to expose students and residents to the challenges of Internal Medicine; the opportunities to approach problems from the start--to make the differential diagnosis, devise a treatment plan, and see the plan and the patient through.

No one I interviewed thought this would be easy. Some said "we don't know how to do it," but many, like Dr. Robert Ebert, said, "we know how to do it, we just don't know how to fund it." Funding for education is an issue of public policy which a number of those I interviewed are addressing. Robert Petersdorf, John Ball, and Deborah Prout note that funding for the training of physicians is caught in the prior question of how to fund health care in general. However, just as changes in public policy, (typically described with acronyms like DRG, ICD9, HMO, IPA and PPO, as well as QA and UR,) have already changed the teaching setting, so public policy can help to pay for medical training in **appropriate** settings.

But while these interviews have shown the long term effects of the external environment, it is difficult to control and predict that environment. Internal Medicine *can not* wait for external public policy to improve its training programs. It must move in. Where, then, have I been told there is hope? How is it possible to improve residency training in the short run?

Dan Federman and others emphasize the importance of explicitly training faculty to teach. A number of programs report they are setting up preceptorships with individual faculty assigned to students and residents. Dr. Nortie Greenberger suggests identifying one chief resident who does nothing but teach, thus re-establishing the person-to-person mentor relationship, and in the NaSIMM surveys that we are receiving in our office this year a number of programs have said they were planning such efforts. This bar graph [slide] of ambulatory training first in 1976 and then in the last four years tells at least the beginning of a story. Between 1976 and 1987 there was virtually no change, but in the last three years ambulatory training has increased

significantly--no doubt, in many cases this reflects only the expansion of time in the ER to fulfill minimum requirements of the ACGME, but more dramatically some programs like that at the New England Medical Center restructure both care and training in centralized, patient-centered ambulatory clinics. Other programs, like Cleveland Metropolitan General Hospital's, find that the firm system is effective for including and training residents in ambulatory care. A number of programs are implementing block rotations in ambulatory training so residents are not placed in the inappropriate and educationally counterproductive position of choosing between routine clinic responsibilities and responding to an urgent call from the ICU. There are also less ambitious but widespread efforts to modify the mix of patients cared for by residents and seen by students, for example, by reducing the concentration of patients with AIDS on certain services and reducing the proportion of time residents spend in critical care units. Suzanne Fletcher, Dan Federman, Norton Greenberger and others emphasized the importance of selecting residents' patients for purposes of education, not service.

To cover service responsibilities some programs are adding auxiliary health personnel, more secretarial and administrative support, and hiring physicians to cover patient service. Programs are also affiliating with community hospitals to provide rotations in which the patients are less sick and the pace less intense. And gradually, very gradually, some are placing residents in physicians' offices. (The training and evaluation for these preceptors still vary widely.) All of these efforts are in flux, but the NaSIMM surveys suggest considerable activity in 1989 and 90. In 1989, eighty-five of the programs that responded to an open-ended question about plans to change training, specified ways in which they were planning to increase ambulatory training; this year 30 additional programs described ambulatory training changes. Internal Medicine programs are beginning to take up the challenge.

Some last reflections: Some whom I interviewed worry that the tensions within Internal Medicine threaten its integrity. One, fearing what he called the "relentless centrifuge of science" quoted the Irish poet Yeats: "things fall apart; the centre can not hold".

But the traditional values and interests of internal medicine remain its strengths. The survey of students reported in the Jan. 1st, 1991 *Annals* shows that the students today who choose internal medicine choose it for the same reasons all those whom I interviewed chose internal medicine--its intellectual core, the diagnostic challenge, and its mentors. The center *does* hold. It is the periphery that is ragged and needs not only repairs but remodelling. The challenge is to protect students and residents from the stressful environment external to internal medicine so that they may experience, as most of you did, and they still wish to, the challenge, the growth, and the gratification of your profession.

While the world of training in internal medicine may seem to be getting, as Lewis Carroll said, "curiouser and curiouser," I now know that physicians in internal medicine *will* step up and find a way to approach this challenge. [slide--cartoon]

Thank you!

TIMELINE: Internal Medicine in Perspective

APM FEBRUARY, 1991

1522

- The Royal College of Physicians, the association for English non-surgical doctors and the regulator of their practice, is granted a charter as a guild.

1810

- Yale Medical School is established.

1847

- Representatives from 40 state medical societies and 20 medical schools meet to form the nationwide American Medical Association "to promote the science and art of medicine and the betterment of public health."

1848

- The New England Medical College, the first medical school in the world exclusively for women, is founded in Boston.

1868

- Howard University College of Medicine admits its first class consisting of 8 students.

1876

- Meharry College is established as part of Central Tennessee College.
- The American Medical College Association holds its first meeting in Philadelphia. The Association holds regular meetings until 1892 when 11 schools, unable to make the reform changes recommended by the Association, withdraw.

1883

- *Journal of the American Medical Association (JAMA)* is established.

1886

- The Association of American Physicians holds its first meeting.

1889

- Johns Hopkins opens its teaching hospital, but lacks sufficient funds to open the intended medical school.

1890

- Four daughters of the original trustees of Johns Hopkins, all well educated, wealthy, and unmarried, approach the leaders of the proposed medical school and offer to raise the \$500,000 needed to open the school and pay for a building *if* the school will agree to open its doors to qualified women. They are given the go-ahead, and, by 1892, the money is in hand. (The school will not open until 1893.)

1892

- First edition of Osler's textbook, *Principles and Practice of Medicine*, is published. Through the influence of this book, North American medicine begins moving to the international forefront.

1893

- Johns Hopkins Medical School opens, drawing the nation's best students to the country's first teaching hospital and its new system of training.

1890

- The American Medical College Association reorganizes under its new name, Association of American Medical Colleges.

1895

- The Mayo Brothers establish the Mayo Clinic in Minnesota.

1901

- The Rockefeller Institute for Medical Research is organized. Simon Flexner is first director.

1906

- The Carnegie Foundation for the Advancement of Teaching is organized.

1910

- The Hospital of the Rockefeller Institute opens to facilitate clinical investigation of patients.
- Abraham Flexner publishes *Bulletin Number Four* under the auspices of the Carnegie Foundation. The Flexner report recommends certain pre-requisites for medical schools, using the Johns Hopkins innovations as the model. Of the 160 medical schools open in 1900, only 70 are able to meet these standards. Of the seven predominantly black schools, only two survive. Women's medical colleges, quite numerous in the late 19th Century, were already in decline.

1913

- Johns Hopkins receives funds to support full-time clinicians. By 1925, Flexner states that there are more than 30 full-time clinical chairs in the United States, Canada, England.

1915

- The American Congress of Internal Medicine is incorporated for the "purposes of facilitating scientific intercourse among physicians interested in internal medicine" by the German-born Heinrich Stein using the Royal College of Physicians in London as a model.
- In May, the governing Council of the Congress incorporates the American College of Physicians to honor physicians of eminence.

1917

- The American Board of Ophthalmology, the first American specialty board, is founded.

1922

- Insulin as a treatment for diabetes is discovered by two Canadian scientists, Frederick Banting and William Best.

1924

- The *Journal of Clinical Investigation* is established.
- The American Board of Obstetrics and Gynecology is founded.

1927

- *Annals of Internal Medicine* is founded.
- The first edition of the *Cecil Textbook of Medicine* is published.

1928

- Penicillin is discovered by Sir Alexander Fleming in England.

1929

- The Stock Market crashes on October 29.
- The Dallas Plan of Baylor University, the beginning of Blue Cross and the 3rd-party payment system, is established.

1932

- Prontosil, the first sulfonamide drug to be used against bacterial infections, is introduced in Germany.

1934

- American Board of Psychiatry and Neurology is founded
- The first surgery specialty board, the American Board of Orthopaedic Surgery, is founded.

1935

- Social Security Act is passed on August 14.

1936

- American Board of Internal Medicine is founded in Philadelphia.

1937

- American Board of Surgery is founded.
- The Group Health Association is founded in Washington, DC.

1941

- ABIM creates Subsidiary Boards or Advisory committees in four subspecialties: Allergy and Immunology, Cardiovascular Disease, Gastroenterology, and Pulmonary Diseases (Tuberculosis). These were the only boarded subspecialties for the next 30 years.

1944

- Serviceman's Readjustment Act--GI Bill of Rights--subsidized residency training for up to four years.
- Public Law 410, the Public Health Service Act of 1944, had given the Surgeon General broad authority to support research and training, and war-time research contracts were thus transferred to the Public Health Service.

1946

- The Hospital Survey and Construction (Hill-Burton) Act is introduced.
- Public Law 293 provided board-certified specialists in VA hospitals with a 25% higher salary than non-boarded doctors.

1948

- NAACP wins a desegregation suit against University of Arkansas, one of 26 approved medical schools which were closed to blacks. The last of these schools removed its color bar in 1966.

1950

- Harrison's *Principles of Internal Medicine*, First Edition, is published.

1951

- The Joint Commission on Accreditation of Hospitals is founded.

1953

- Residency Review Committee in Internal Medicine is founded.
- The Federal Security Agency is supplanted by the Department of Health, Education, and Welfare.
- DNA is discovered.

1954

- Jonas Salk develops an injectable vaccine against polio.

1956

- American Society of Internal Medicine (ASIM) is founded.

1959

- Supporters of family practice request certification from the American Board of Internal Medicine. The board refuses to consider their proposition, and, while reported by those present, no record of this request can be found in the minutes of the meeting.

- Health Professions Educational Assistance Act authorizes construction grants and loans for undergraduate medical students and others.

1965

- Medicaid and Medicare, carrying with it certain Federal support for post-graduate education, become part of the Social Security Amendments of 1965.
- The Coggeshall Report, issued under the auspices of the AAMC, warns that the increasing specialization of physicians could be detrimental to patient care.

1966

- Millis Report, an American Medical Association response to Coggeshall, suggests that modification in medical education would prepare more primary physicians and recommends more graduate-level primary care training.

1967

- ABIM announced four-year training program as qualifying for certification in both pediatrics and internal medicine.

1968

- Health Manpower Act encourages increases in medical school enrollment and allocates construction funds for medical schools.

1969

- The American Board of Family Practice is founded.
- The Clinical Scholars Program begins, with funding from the Carnegie Corporation and the Commonwealth Fund.

1970

- Carnegie Commission Report identifies a need for more physician manpower.
- ABIM decides to abandon the Oral Examination by 1972.

1970

- The Institute of Medicine is chartered by the National Academy of Sciences to enlist distinguished members of the medical community and other professions in the study of issues and problems that affect the public's health.

1971

- Comprehensive Health Manpower Training Act provides support for increased enrollment in medical school.

1972

- ABIM administers subspecialty examinations in five new subspecialty areas: Endocrinology and Metabolism, Hematology, Infectious Disease, Nephrology, and Rheumatology.
- The Robert Wood Johnson Foundation takes over the Clinical Scholars Program.

1973

- The Board certifies in Medical Oncology and allows dual certification with Hematology after a total of 3 years of training in both.

1974

- APM creates Task Force on Manpower.
- Report of the Coordinating Council on Medical Education suggests that 50% of medical school graduates should become primary care specialists, and encourages institutions responsible for graduate education to establish primary-care residencies.

1974-5

- Congressional debates shift from the need for more physicians to the training of specific types of physicians and providing health care to all citizens.

1976

- Health Professions Educational Assistance Act of 1976 (Public Law 94-484) provides government endorsement of the CCME's primary care recommendations.

1980

- Graduate Medical Education Advisory Committee (GMENAC) reports that the United States faces a growing over-supply of physicians by the year 2000.

1987

- ABIM offers a Certificate of Added Qualifications in Critical Care.

1988

- ABIM, along with the American Board of Family Practice, offers a Certificate of Added Qualifications in Geriatrics.

NaSIMM Data

**PERCEIVED QUALITY OF APPLICANTS TO
INTERNAL MEDICINE PROGRAMS**

1989 AND 1990

Nationally, internal medicine programs are concerned about recruiting from among the best graduates for careers in internal medicine. Which of the following best describes your program?

Recently your program has attracted: (CHOOSE ONE)

	1989	1990
MORE QUALIFIED APPLICANTS	17.7	14.2
ABOUT THE SAME NUMBER OF QUALIFIED APPLICANTS	38.1	40.9
FEWER QUALIFIED APPLICANTS	33.8	35.4
SIGNIFICANTLY FEWER QUALIFIED APPLICANTS	10.3	9.5

CALL SCHEDULE

NIGHTS ON CALL

Average # Nights on Call Per Month (1976 - 1987)

	1976	1987
R1	8.66	7.23
R2	7.19	6.09
R3	5.15	4.78

"Changes in Nights on Call in the Last Two Years" (1988 - 1990)

	1988	1989	1990*
MORE TIME	3.3%	2.0%	2.5%
NO CHANGE	55.2	51.0	43.2
LESS TIME	41.5	47.0	54.3

SCHEDULED HOURS

"Changes in Scheduled Hours in the Last Two Years" (1988 - 1990)

	1988	1989	1990*
MORE TIME	2.2%	1.0%	1.4%
NO CHANGE	75.3	60.0	50.4
LESS TIME	22.5	39.0	48.2

*ALL 1990 DATA ARE PRELIMINARY

1976 - 1990

Changes in % Training Time Spent in Ambulatory Setting

During the course of a year, what percentage of the average resident's time in patient care is spent in inpatient and ambulatory (outpatient) services?

		1976	1987	1988	1989	1990*
R1	INPT	86.5	86.5	81.7	80.1	79.0
	OUTPT	13.5	13.5	18.3	19.9	21.0
R2	INPT	84.7	84.3	75.3	72.1	71.4
	OUTPT	15.3	15.7	24.7	27.9	28.5
R3	INPT	84.0	83.1	70.8	67.7	67.4
	OUTPT	16.0	16.9	29.2	32.3	32.6

Have there been significant changes in the amount of time your residents spend in outpatient training in the last 2 years?

	1987	1988	1989	1990*
MORE TIME	46.3%	59.5%	67.0%	68.0%
NO CHANGE	52.7	40.3	33.0	31.2
LESS TIME	1.0	0.2	0.0	0.8

***ALL 1990 DATA ARE PRELIMINARY**

**PERCENTAGE OF RESIDENTS' TIME IN AMBULATORY CARE
SPENT IN FOLLOWING LOCATIONS:**

		1988	1989	1990
AMBULATORY CLINIC AT HOSPITAL (INCLUDE ER)	R1	90.4	93.0	93.0
	R3	78.3	77.5	82.4
HOSPITAL AFFILIATED CLINIC AWAY FROM HOSPITAL	R1	3.7	3.0	3.2
	R3	5.8	5.6	4.0
HEALTH MAINTENANCE ORGANIZATION	R1	1.2	1.0	0.1
	R3	2.5	2.3	2.0
PHYSICIAN'S PRIVATE OFFICE	R1	4.0	2.5	2.9
	R3	12.1	13.4	9.7
PUBLIC SERVICE CLINIC	R1	.5	.5	.8
	R3	1.3	1.2	1.8

**PERCENT OF RESIDENTS' TIME IN AMBULATORY CARE
SPENT IN THE FOLLOWING LOCATIONS:**

	1989	1990
AMBULATORY CLINIC IN A HOSPITAL	52.9	47.6
HOSPITAL AFFILIATED CLINIC ADJACENT TO A HOSPITAL	9.4	11.5
HOSPITAL AFFILIATED CLINIC AWAY FROM A HOSPITAL	3.0	3.2
PHYSICIAN'S PRIVATE OFFICE	2.5	2.9
HEALTH MAINTENANCE ORGANIZATION (HMO)	1.0	.1
PUBLIC SERVICE CLINIC	0.5	0.8
EMERGENCY ROOM	30.2	32.9
OTHER	0.5	1.0

**CHANGE IN DISTRIBUTION OF TIME IN SUBSPECIALTY TRAINING AND
PRIMARY CARE TRAINING**

In the last 2 years have there been any significant changes in the amount of time your residents spend in...

SUBSPECIALTY TRAINING (1976, 1987 and 1988)

	1976	1987	1988
MORE TIME	32.7%	12.6%	10.8%
NO CHANGE	53.1	72.9	80.3
LESS TIME	14.2	14.5	8.9

PRIMARY CARE TRAINING (1989 AND 1990)

	1989	1990
MORE TIME	36.6%	34.4%
NO CHANGE	63.4	64.8
LESS TIME	0	0.8

May 7, 1991

Training in Internal Medicine: Mystery, Inquiry, Technology

INTRODUCTION:

(Ch.1) Change and Challenge

Issues that moved us to write the book, including larger social-historical context

MODEL AND METHOD

(Ch.2) Open Systems: A Model for Analysis:

I (Environment)

II (Inputs)

III (Process)

IV (Output)

(Ch.3) Methods for This Study

Qualitative Analysis--Grounded Theory

Interviews with Influentials and Selected Housestaff

Observation and Participation at Conferences

Documents--Historical and Contemporary (including other organizations)

Detailed Review of Literature

Open-ended Responses From Program Directors

Quantitative Analysis--Survey Data

NaSIMM Surveys since 1976

Other Data Sets:

AMA, AAMC

NRMP

NIH and Government Data

ABIM and Subspecialty Societies

ACP

Typology

ENVIRONMENT OF TRAINING PROGRAMS

(Ch. 4) The Context of Internal Medicine - Its teachers over time

History

Mystery (The Intellectual Core of Medicine)

Mentors (One approach to teaching how to solve the mystery)

Technology (Medical and Scientific--another approach)

Sociopolitical Aspects
Hospital Relations
Regulation and Credentialing
Setting: Regional, Urban/Rural
Community/University

Medical Aspects
Disease Patterns
Aging Population

(Ch. 6) Economics of Training

(Outside of Program)
Government
Foundations
Grants

(Within Program)
Tuition
Fees
Hospital Funds
Practice Plans
Generalists vs. Subspecialists/Proceduralists
(Departmental Schisms)

THOSE WHO ENTER TRAINING PROGRAMS

(Ch.7) The People, Their Pressures, and The Medical Schools from Which They Come

Men
Women
Minorities
FMGs

Pressures: Social
Expectations: Personal & Professional
Economic
SES
Debt

Medical Schools
Influence on choice

The Match - National Residency Matching Program

THE PROCESS OF TRAINING PROGRAMS

(Ch.8) Teaching, Clinical Practice, and Research Over Time

Types: Traditional, Primary Care, etc.
Faculty and Teaching Methods
Diagnosis and Treatment
Training Conditions and Settings
Hours and Nights on Call
Setting--Inpatient/Ambulatory
Those in Training: Men, Women, Minorities & FMGs

(Ch.9) The Special Case of Information Technology

Review of Literature
Report of Findings

(Ch.10) Subspecialty Training

Overview of Traditional Subspecialties
Special Cases in Subspecialty Training:
Geriatrics
Critical Care
Hem/Onc
General Internal Medicine

THOSE WHO HAVE TRAINED IN THE PROGRAMS

(Ch.11) Practitioners and Academicians (Outputs)

Practice or Academia
Academic Focus (i.e., Research or Clinical Tracks)
Geographic Location
Ethnic and Gender Distribution
Primary Care/Subspecialties

CONCLUSIONS AND POLICY IMPLICATIONS

(Ch. 12) Summary of Findings

Implications: The Future of Graduate Education in Internal Medicine
Participants: Women, Minorities, FMGs
Different Possible Scenarios

