Withdrawal and Extended Leave during Residency Training: Results of a National Survey

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ABSTRACT

Background. Although national figures for medical student withdrawal and extended leave have long been reported, similar data have not been available for residents in training.

Method. Data for this study came from the American Medical Association survey of the 1991–92 residency year, in which program directors were asked for information about residents who had taken extended leave or had withdrawn or been dismissed from their programs prior to completion. Data are reported for 89,368 residents enrolled in 6,302 programs (89.2% of all surveyed programs).

Results. During the 1991–92 year, 2,449 residents (2.7%) withdrew or were dismissed from their programs and 887 (1.0%) took extended leave. Specialty and program changes accounted for 56% of the withdrawals, while performance difficulties were implicated in 12.9%. Maternity or paternity leave was involved in 32.2% of extended leaves, followed by research sabbaticals (11.4%) and physical problems (10.5%). Women had higher rates of both withdrawal and extended leave than men. Withdrawal for performance difficulties was lowest among graduates of U.S. and Canadian allopathic schools as compared with graduates of osteopathic or foreign medical schools, and lowest among Caucasians as compared with those of other racial–ethnic identities.

Conclusion. Although overall figures and percentages are low, there are small but persistent losses of residents annually that vary by specialty, gender, race–ethnicity, and education.

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Although it is widely perceived and generally accepted that the years of graduate medical training are highly demanding and stressful for young physicians and their families, little has been reported on the number of physicians in training who fail to complete their residency programs or drop out of the profession during these years. To date, there have been only three reports on loss and attrition at the residency level, two of them limited to a single specialty. In 1986, based on data collected from 63% of the nation's internal medicine residency program directors, Smith and colleagues[1] reported that over a five-year period, 55.5% of the programs granted leaves of absence to residents (an average of 0.9% residents per year) because of "debilitating emotional problems." In 1992, Seltzer and colleagues[2] analyzed returns from program directors of 265 of the 295 obstetrics and gynecology residency programs in the United States and Canada. During a two-year period, 299 residents (3.4% per year) left their programs, 88 for another specialty and 62 for other obstetrics and gynecology programs. Fifty-eight were dismissed, and 40 relocated to join spouses.

Creation of the American Medical Association's Fellowship and Residency Electronic Interactive Database Access (AMA–FREIDA) system and the Medical Education and Research Information (MERI) database enabled the first consistent, nationwide, cross-specialty compilation of resident withdrawal and extended-leave data.[3,4] Partial data on resident loss derived from the MERI database were reported in 1992 by Martini,[5] covering 32,765 residents who completed or left graduate medical education (GME) programs in 1990–91. Martini's analysis indicated that, of this number, 11,084 residents were "pursuing other GME," 14,288 were "entering practice," and 4,117 were leaving or failing to complete their programs for "unknown" reasons. Another 3,276 withdrew or took extended leave for "other reasons," including illness; substandard performance; personal, family, or legal problems; and changes in pro-

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fessional objectives. In the present report we provide an in-depth analysis of data from the 1991–92 residency year, covering withdrawal and extended leave from residencies in all specialties and subspecialties and for all causes.

METHOD

Data for this study came from the 1991–92 AMA survey of residency program directors, which had an 89% response rate.[6] The survey included a set of questions on the progress of residents, including information about those who had withdrawn, been dismissed, or taken extended leave. If a resident had left the program prior to expected completion, the computerized data collection software automatically queried the program director about why the resident was no longer in the program. In other words, people successfully completing a program and naturally progressing to a subspecialty were *not* included in this data set. The software automatically provided a list of 35 reasons from which the program director was asked to select a *primary* reason for the withdrawal or extended leave. When these data entered the MERI database, the resident's name and personal identifying information were dropped from the file, leaving a record that contained the specialty, subspecialty, state, action (withdrawal or extended leave), reasons, citizenship or visa status, gender, racial and/or ethnic identity, medical school type, and year in the program.

To simplify the data presentation in this paper, the 35 reasons provided in the survey for withdrawal and extended leave were grouped and *collapsed* into 19 reasons (List 1). Likewise, the listing of specialties and subspecialties was collapsed. Those requiring completion of a residency prior to entry into the subspecialty were collapsed into subspecialty groupings under the required entry specialty.

To facilitate comparisons across groups, adjusted ratios were calculated for certain data. The ratio used is a standardized rate ratio, reflecting the proportionate representation of cell members (e.g., female residents) in the category of interest (e.g., withdrawal for maternity or paternity leave) relative to their representation in the resident population. A ratio of 1.00 indi-

List 1

Reasons for Withdrawal and Extended Leave during Residency Training, National Survey, 1991–92*

Primary Reason	Collapsed Reason
Resident changed program (same specialty)	Program change
Resident changed specialty	Specialty change
Return to home country	Home country/immigration
Immigration difficulties	
Entered practice	Entered practice
Military/government service obligation	Entered military
Physical illness	Physical problem
Physical handicap	
Financial problem	Financial problem
Joined spouse in different residency location	Family concerns
Family concerns/problems (illness, death, other)	
Family concerns/problems (spousal)	
Maternity/paternity leave	Maternity/paternity leave
Time off from medicine as a career	Time off from medicine
Leaving medicine as a career	Leaving medicine
Research sabbatical	Research sabbatical
Probable suicide	Death (all causes)
Accident/natural causes of death	
Attempted suicide	Impairment
Psychiatric illness	
Other emotional disturbance	
Alcohol abuse	
Drug abuse	
Dubious ethical/moral behavior	Dubious ethical/moral behavior
Incompetence (knowledge)	Performance difficulties
Incompetence (skill)	
Licensing/exam problems	
Incompetence (interpersonal relations)	
Poor attitude	
Failure to adjust to residency	
Not promoted	
Performance below residency standards	
Don't know	Don't know
Other	Other
Missing	Missing

*Data are from the American Medical Association's survey of residency program directors. For each resident who withdrew or took extended leave, the director was asked to select one of 35 *primary* reasons. To simplify data presentation in their study, the authors then grouped and collapsed these reasons into 19 *collapsed* reasons.

cates that cell members are represented in the category at a rate proportional to their representation among all residents enrolled in 1991–92. An adjusted ratio greater than 1.00 (e.g., 1.50) reflects a representation 1.5 times greater than that of the membership in the population; a ratio less than 1.00 (e.g., 0.50) reflects a representation less than that of other groups in the population. For example, in this study female residents constituted 96.5% of all residents who took extended leave for maternity or paternity reasons; however, they composed only 31.2% of all residents during 1991–92. Therefore, women were overrepresented (relative to men) in the category of maternity or paternity leave by a factor of 3.09 (96.5% / 31.2%).

Relative risk ratios were calculated to assess the significance of differences across categories. In those cases where the grouping is binary (specialty and gender), the relative risk is equal to the adjusted ratio. A significant difference for specialty means that the specialty of interest deviated substantially from the average for all other specialties. A significant difference for gender means that women differed from men.

For race–ethnicity and medical school type, where the number of categories is greater than 2, relative risk ratios were calculated using the predominant category as a baseline (Caucasians for race–ethnicity and U.S. and Canadian schools accredited by the Liaison Committee on Medical Education—LCME—of the AMA and Association of American Medical Colleges for school type). Therefore, significant differences in these tables mean that the other racial–ethnic groups differ from Caucasians (reference group) or that graduates of osteopathic and foreign schools differ from graduates of LCME-accredited schools (reference group). The sample constitutes at least 89% of the population; therefore, estimates should be quite stable. The relatively small sizes of certain table cells should be considered when interpreting the results; however, the statistical tests are valid.

Results

For the 1991–92 residency year, detailed information was available for 89,368 residents enrolled in the 6,302 programs that responded before the cutoff date of December 15, 1992.[6] Data reported here were only from programs with residents who withdrew or took extended leaves during that year. For the 1991–92 year, 2,449 residents (2.74%) were reported as having withdrawn or been dismissed from their programs prior to completion, and 887 (1.0%) took or were granted extended leave.

Table 1 summarizes the reported reasons for withdrawal and extended leave by number and percentage. The most common reasons given for withdrawal were specialty change and program change, followed by performance difficulties. Of the 887 residents who took or were granted extended leave, those with maternity or paternity leave accounted for the highest number and percentage, followed by those on research sabbatical and those with physical problems. Although overall data for withdrawal and extended leave are reported in absolute numbers and percentages, it is of interest to calculate the percentages if the numbers for program change and specialty change prior to program completion are set aside. Of the remaining residents who withdrew or were dismissed, the largest percentage (29.4%) was for performance difficulties. Included in this last category were incompetence (knowledge), 9.2%; incompetence (interpersonal skills), 4.4%; incompetence (skill), 2.9%; failure to adjust to residency, 16.2%; performance below residency standards, 48.6%; poor attitude, 1.0%; and not promoted 14.0%.

Table 1

Numbers and Percentages of Residents Who Withdrew or Took Extended Leave, by Reason for Attrition, National Survey, 1991–92*

	Withdrawal		Extended Leave	
Primary Reason for Attrition	No.	%	No.	%
Program change	677	27.7	25	2.8
Specialty change	699	28.6	31	3.5
Home country/immigration	33	1.3	11	1.2
Entered practice	86	3.5	5	0.6
Entered military	19	0.8	15	1.7
Physical problem	33	1.3	93	10.5
Financial problem	11	0.4	5	0.6
Family concerns	183	7.5	84	9.5
Maternity/paternity leave	11	0.4	286	32.2
Time off from medicine	34	1.4	24	2.7
Leaving medicine	15	0.6	2	0.2
Research sabbatical	6	0.2	101	11.4
Death (all causes)	13	0.5	0	—
Impairment	43	1.8	50	5.6
Dubious ethical/moral behavior	13	0.5	1	0.1
Performance difficulties	315	12.9	33	3.7
Don't know	129	5.3	80	9.0
Other	81	3.3	17	1.9
Missing	48	2.0	24	2.7
TOTAL	2,449	100.0	887	100.0

*Data are from the American Medical Association's survey of residency program directors.

Table 2

Numbers and Percentages of Residents Who Withdrew or Took Extended Leave, by Year in Residency, National Survey, 1991–92*

	Withdrawal		Extended Leave	
Residency Year	No.	%	No.	%
1st year	1,344	54.9	179	20.2
2nd year	732	29.9	236	26.7
3rd year	286	11.7	325	36.6
4th year, and above	87	3.5	147	16.6
TOTAL	2,449	100.0	887	100.0

*Data are from the American Medical Association's survey of residency program directors.

The largest number of withdrawals took place in the first year, with declining percentages in succeeding years (Table 2). The high withdrawal rate in the second year may be partially explained by those specialties (e.g., anesthesiology, orthopedics, emergency medicine) that generally require a preliminary year in medicine or surgery before entering specialty training. Extended leaves were fairly evenly spread over the first three years but were more likely than withdrawal to occur in the third year and beyond.

Examining attrition rates by specialty (Table 3) reveals considerable variation, with certain specialties such as pathology, psychiatry, preventive medicine, and family practice having higher than expected rates of withdrawal and extended leave, while others such as emergency medicine, the medicine subspecialties, and the surgery subspecialties had lower than expected ratios.

Table 4 shows that by an overwhelming margin, women had higher rates than men for both withdrawal and extended leave for maternity or paternity leave and for family concerns, as well as for physical problems and time off from medicine.

Examination of loss and attrition by race and ethnicity demonstrated substantial differences across categories (Table 5). Overall, Caucasians were significantly less likely to withdraw than were those from other groups. While African American, Hispanic, and Asian residents were twice as likely as Caucasians to have withdrawn or been dismissed for performance difficulties, rates of extended leave for performance difficulties were over eight times higher for African Americans and Hispanics than for Caucasians.

International medical graduates (IMGs) had twice the expected rates of withdrawal and extended leave for program change prior to completion as did graduates of LCME-accredited schools, as well as higher rates of specialty change (Table 6). However, they had less than half the adjusted ratio for impairment than either osteopathic or LCME graduates. Withdrawal for performance difficulties was lowest among LCME graduates, with osteopathic graduates being two times as likely, and IMGs over three times as likely, as LCME graduates to have withdrawn or been dismissed for performance difficulties.

Table 3

Numbers and Adjusted Ratios of Residents Who Withdrew or Took Extended Leave, by Specialty, National Survey, 1991–92*

	Withdrawal		Extended Leave	
Specialty	No.	Adjusted Ratio	No.	Adjusted Ratio
Anesthesia	160	1.08†	73	1.36†
Emergency medicine	22	.38†	15	.71†
Family practice	241	1.25†	123	1.76†
Internal medicine	661	1.25†	171	.89†
Internal medicine subspecialties	109	.39†	52	.52†
Obstetrics–gynecology	122	.91†	34	.70†
Pathology	132	1.84†	49	1.89†
Pediatrics	159	.86†	71	1.06
Pediatric subspecialties	36	1.08†	17	1.41†
Physical medicine/rehabilitation	18	.67†	7	.72†
Preventive medicine	15	1.38†	14	3.56†
Psychiatry	227	1.49†	86	1.56†
Radiology	98	.80†	29	.66†
Surgery	283	1.29†	105	1.31†
Surgery subspecialties	98	.43†	23	.28†
Transitional‡	38	.95	9	.62†
Combined specialties§	30	1.46†	9	1.20
TOTAL	2,449		887	

*Data are from the American Medical Association's (AMA's) survey of residency program directors. Definitions of specialties were based on the AMA's *Directory of Graduate Medical Education Programs, 1991–92*, Chicago, Illinois: AMA, 1991. The adjusted ratios are based on comparisons across specialties (see text for details).

†Significant difference between specialty and all others ($p < .05$); ‡transitional programs are one-year programs with rotations, typically in medicine, pediatrics, and surgery; §combined programs (e.g., medicine–pediatrics) allow a resident to qualify for boards in two specialties.

Table 4

Numbers and Adjusted Ratios of Residents Who Withdrew or Took Extended Leave, by Gender, National Survey, 1991–92*

	Withdrawal				Extended Leave			
	Women		Men		Women		Men	
Reason for Attrition	No.	Adjusted Ratio	No.	Adjusted Ratio	No.	Adjusted Ratio	No.	Adjusted Ratio
Program change	239	1.15†	426	.93	6	.77	19	1.10
Specialty change	226	1.07	451	.97	6	.66	23	1.15
Home country/immigration	5	.49†	28	1.23	3	.87	8	1.06
Entered practice	28	1.09	54	.96	2	1.28	3	.87
Entered military	4	.85	11	1.07	4	.85	11	1.07
Physical problem	14	1.45†	17	.80	57	1.96†	36	.56
Financial problem	1	.32	9	1.31	2	1.28	3	.87
Family concerns	105	1.90†	72	.59	49	1.87†	35	.61
Maternity/paternity leave	10	2.91†	1	.13	273	3.09†	10	.05
Time off from medicine	19	1.84†	14	.62	14	1.87†	10	.61
Leaving medicine	7	1.49	8	.78	0	—	2	1.45
Research sabbatical	1	.53	5	1.21	18	.57†	83	1.19
Death (all causes)	3	.80	9	1.09	0	—	0	—
Impairment	10	.78	31	1.10	19	1.22	31	.90
Dubious ethical/moral behavior	3	.74	10	1.12	0	—	1	1.45
Performance difficulties	80	.85†	223	1.07	10	.97	23	1.01
Don't know	41	1.03	86	.98	42	1.70†	37	.68
Other	29	1.19	49	.91	11	2.07†	6	.51
Missing	13	.93	32	1.03	11	1.53†	12	.76
TOTAL‡	838	1.13†	1,536	.94	527	1.92†	353	.58

*Data are from the American Medical Association's survey of residency program directors. The adjusted ratios are based on comparisons between the genders (see text for details).

†Significant difference between women and men residents ($p < .05$); ‡the total numbers for this table are different from the totals for Tables 1–3 because 82 residents were missing gender designations in the survey data.

DISCUSSION

It is important to realize that these responses represent the designations or opinions of the program directors and not those of the departing residents. Therefore, the reader must consider the possibility that the real reasons for resident withdrawal or extended leave may have been ignored or concealed. Nonetheless, the recorded figures are useful in demonstrating a small but persistent loss of residents and in highlighting critical patterns within the data. It also should be noted that because the data indicate the rates of loss for a single year only, the chance of a particular resident's experiencing extended leave or withdrawal over the length of his or her training program probably is considerably higher than the numbers presented here.

The survey response rate was high, representing nearly 90% of residency programs in the country. To the extent that the programs failing to respond differed from those that responded, the numbers reported could be biased. In general, however, those programs that did not respond to the AMA annual survey tended to be small (fewer than five residents) and were mainly subspecialty programs.[7] Also, withdrawal and extended-leave questions compose only a small part of the survey, so there is little reason to believe that the decision to respond or not to the survey would be influenced by anomalous withdrawal and/or extended-leave data. Throughout the analysis the number of responses labelled "other" or "don't know" (8.6%) is of concern.

Adjusted ratios were presented alongside the absolute numbers to provide a clearer understanding of the data when comparing across variables. For example, in Table 3 it is possible clearly to identify specialties with relatively high or low rates of withdrawal and extended leave. Both medicine and surgery subspecialties had very low rates for both withdrawal and extended leave, possibly because of more rigorous selection and the residents' longer training. It is also possible to see which specialties had higher than expected rates of extended leave, suggesting an

Table 5

Numbers and Adjusted Ratios of Residents Who Withdrew or Took Extended Leave, by Race–Ethnicity, National Survey, 1991–92*

	Withdrawal								Extended Leave							
	African American		Asian		Hispanic		Caucasian		African American		Asian		Hispanic		Caucasian	
Reason for Attrition	No.	Adjusted Ratio	No.	Adjusted Ratio	No.	Adjusted Ratio	No.	Adjusted Ratio	No.	Adjusted Ratio	No.	Adjusted Ratio	No.	Adjusted Ratio	No.	Adjusted Ratio
Program change	41	1.28†	147	1.39	36	.93	424	.90	0	—	7	1.78†	1	.70	16	.92
Specialty change	31	.94	93	.85†	53	1.33†	491	1.01	1	.65	7	1.38†	3	1.62	20	.89
Home country/immigration	3	1.89†	14	2.67†	4	2.09†	11	.47	1	1.83	5	2.78†	0	0	5	.63
Entered practice	2	.47†	7	.50†	6	1.18	70	1.13	0	—	2	2.44†	0	—	3	.83
Entered military	4	4.48†	3	1.02	2	1.86†	9	.69	1	1.34	0	—	0	—	14	1.28
Physical problem	6	3.90†	4	.79†	2	1.08	19	.84	5	1.08	10	.66	11	1.98†	67	.93
Financial problem	0	—	1	.56	0	—	10	1.25	0	—	0	—	1	3.34	4	1.10
Family concerns	14	1.56†	38	1.28†	14	1.29†	115	.87	5	1.24	15	1.13	3	.62	58	.99
Maternity/paternity leave	0	—	2	1.22	1	1.67	7	.96	24	1.73†	38	.83†	7	.42†	211	1.04
Time off from medicine	0	—	3	.56†	0	—	30	1.25	1	.92	1	.28†	2	1.52	18	1.13
Leaving medicine	1	1.44	2	.87	1	1.19	10	.98	0	—	0	—	0	—	2	1.38
Research sabbatical	0	—	1	1.22	0	—	4	1.10	3	.60†	9	.54†	5	.83	84	1.14
Death (all causes)	2	3.10†	1	.47	0	—	10	1.06	0	—	0	—	0	—	0	—
Impairment	2	1.01	3	.46†	3	1.25	32	1.10	2	.82	2	.25†	5	1.71	40	1.12
Dubious ethical/moral behavior	1	1.55	4	1.88†	1	1.29	7	.74	0	—	0	—	0	—	1	1.38
Performance difficulties	30	2.06†	74	1.54†	28	1.59†	162	.76	7	4.28†	7	1.30†	8	4.05†	11	.46
Don't know	5	.80	23	1.11	3	.40†	95	1.04	1	.26†	9	.71†	3	.65	64	1.14
Other	4	1.12	19	1.61†	3	.70	46	.88	1	1.26	1	.38†	1	1.05	13	1.12
Missing	2	.94	10	1.42†	1	.39	30	.96	1	1.06	2	.64†	0	—	16	1.16
TOTAL‡	148	1.28†	449	1.17†	158	1.13†	1582	.93	53	1.24	115	.81†	50	.47	647	1.03

*Data are from the American Medical Association's survey of residency program directors. Racial–ethnic groups were defined following the standard categories used in *JAMA* education issues. The adjusted ratios are based on comparisons across racial–ethnic groups (see text for details).

†Significant difference between Caucasion and other residents ($p < .05$); ‡the total numbers for this table are different from the totals for Tables 1–3 because 134 residents were missing racial–ethnic designations in the survey data.

Table 6

Numbers and Adjusted Ratios of Residents Who Withdrew or Took Extended Leave, by Medical School Type, National Survey, 1991–92*

	Withdrawal						Extended Leave					
	Osteopathic		Foreign		LCME†		Osteopathic		Foreign		LCME†	
Reason for Attrition	No.	Adjusted Ratio	No.	Adjusted Ratio	No.	Adjusted Ratio	No.	Adjusted Ratio	No.	Adjusted Ratio	No.	Adjusted Ratio
Program change	27	1.13‡	257	1.74‡	391	.78	3	3.40‡	9	1.64‡	13	.70
Specialty change	25	1.02	185	1.21‡	486	.94	1	.91	16	2.36	14	.61
Home country/immigration	8	5.53‡	28	3.12‡	5	.16	0	—	9	3.74‡	2	.24
Entered practice	8	2.64‡	18	.96	60	.94	0	—	1	.91	4	1.07
Entered military	3	4.47‡	3	.72	13	.92	3	5.67‡	0	—	12	1.07
Physical problem	2	1.77	8	1.14	22	.92	8	2.44‡	16	.79	69	.99
Financial problem	1	2.58‡	3	1.25	7	.85	0	—	1	.91	4	1.07
Family concerns	5	.78	63	1.58‡	114	.84	4	1.35	17	.92	63	1.01
Maternity/paternity leave	1	2.83‡	2	.91	7	.94	10	.99	42	.67‡	234	1.10
Time off from medicine	1	.83	2	.27‡	31	1.22	0	—	3	.57‡	21	1.17
Leaving medicine	1	1.89	4	1.22	10	.89	0	—	1	2.28	1	.67
Research sabbatical	0	—	1	.76‡	5	1.12	0	—	5	.23	96	1.27
Death (all causes)	2	4.36‡	2	.70	9	.93	0	—	0	—	0	—
Impairment	2	1.32	5	.53‡	36	1.12	3	1.70	2	.18‡	45	1.21
Dubious ethical/moral behavior	1	2.18	4	1.40	8	.83	0	—	1	4.57	0	—
Performance difficulties	15	1.36‡	155	2.27‡	142	.61	1	.86	12	1.66‡	20	.81
Don't know	12	2.66‡	32	1.14‡	84	.88	3	1.06	14	.80	63	1.06
Other	4	1.42‡	26	1.48‡	50	.84	1	1.67	0	—	16	1.26
Missing	4	2.52‡	17	1.72‡	24	.72	1	1.35	3	.65	17	1.09
TOTAL§	122	1.42‡	815	1.52‡	1,504	.83	38	1.22	152	.79‡	694	1.05

*Data are from the American Medical Association's (AMA's) survey of residency program directors. The adjusted ratios are based on comparisons across medical school types (see text for details).

†LCME: Liaison Committee on Medical Education of the AMA and Association of American Medical Colleges (accredits allopathic schools in the United States and Canada); ‡significant difference between LCME graduates and other residents ($p < .05$); §the total numbers for this table are different from the totals for Tables 1–3 because 11 residents were missing designations for medical school type in the survey data.

attempt to retain rather than discharge residents. In similar fashion, the use of ratios in Table 5 enables one to observe the relatively higher rates of withdrawal and extended leave for residents with certain racial and ethnic identities. Of note is the higher-than-expected proportion of African Americans who withdrew because of physical problems and were identified as having performance difficulties. One problem constraining better understanding of these data is that the categories used conform to the AMA definitions of race and ethnicity and may involve more than one subgroup.

The generally low incidence of overall withdrawal and extended leave (3.7% of all residents in 1991–92), combined with the extremely low number (17) actually planning to leave medicine as a career suggest that once residents enter the system, they are highly likely to stay, if not in their original program or specialty, then in another. The close similarity to the findings reported by Seltzer and colleagues[2] (3.4%) and Martini[5] (3.8%) is reassuring and suggests the stability of these figures over time. That these percentages also approximate those recorded for withdrawal and extended leave from medical school (3.2%) is of interest.[8]

The residents who changed program or specialty did so prior to completing the program. Listing program change or specialty change as a reason, therefore, may possibly represent an easy way for program directors to mask a more significant problem, especially if the resident's problem is borderline or involves a potential legal action. The current legal climate may be making program directors wary about revealing potentially damaging information about a departing resident, even on a confidential questionnaire.

Of particular concern are those residents whose reasons for departure were designated performance difficulties. Many kinds of performance difficulties were listed in the survey; however, we could not discern how many of these represented exaggerated expectations or personality conflicts rather than true incompetence. What is apparent is that graduates of foreign or osteopathic med-

ical schools more frequently experienced such difficulties, as did residents with certain ethnic and racial identities. It is especially unfortunate that such residents tended to leave their programs early, when what may have been needed was more rather than less training. The effect on the quality of future patient care from residents who leave to enter practice before completion of training, especially those who are discharged for incompetence and performance difficulties, is incalculable but should be of concern to the profession.

The large number of residents who withdrew for family concerns (183) or took maternity or paternity leave (286) is also of note. As an increasing number of women enter graduate medical education, further accommodation for childbearing and child care during residency training will need to be devised. Relative to concerns generally expressed in the literature, the number of residents for whom impairment represented a reason for withdrawal or extended leave (93) was surprisingly small. Substance abuse was specified as a primary reason for relatively few of the withdrawal and extended-leave group (36). Thus, our data appear to suggest that personal issues such as emotional problems, substance abuse, and ethical misconduct are not frequent or major reasons for residents to leave their programs. Last, the data on program change and especially those on specialty change must be watched carefully in light of the current workforce debate. Premature withdrawal from internal medicine and family medicine appears to be occurring at a rate greater than expected. If this trend continues, national workforce projections and policies may need to be reconsidered.

This study has attempted to document the actual numbers and causes of resident withdrawal and extended leave by specialty, gender, education, and race–ethnicity. It confirms the fact that there are small but persistent annual workforce losses during residency training throughout the country and that these losses vary by residents' specialty, gender, education, and race–ethnicity. While some withdrawal and some extended leave seem inevitable, each resident lost to medicine undoubtedly represents a considerable personal cost as well as a large educational financial investment, much of it on the part of taxpayers. In addition, even temporary absences disrupt the work schedules and service loads of fellow residents and make for discontinuity of training experience. Unfortunately, complete and accurate numbers for loss and attrition from residency programs during the past are not available, but the findings in this study are of sufficient concern to consider improving the educational preparation as well as the work environments of residents in training throughout the country. We recommend these data be closely monitored in the future to determine trends in loss and attrition, especially as these may affect physician workforce planning and quality of care.

References

1. Smith, J. W., Denny, W. F., and Witzke, T. B. Emotional Impairment in Internal Medicine House Staff: Results of a National Survey. *JAMA* 255(1986):1155–1158.
2. Seltzer, V. L., Messer, R. H., and Nehra, R. D. Resident Attrition in Obstetrics and Gynecology. *Am. J. Obstet. Gynecol.* 166(1992):1315–1317.
3. Rowley, B. D. AMA–Fellowship and Residency Electronic Interactive Database Access (AMA–FREIDA): A Computerized Residency Selection Tool. *JAMA* 260(1988):1059.
4. Rowley, B. D., Baldwin, D. C., Jr., McGuire, M., Etzel, S., and O'Leary, C. J. Graduate Medical Education in the United States. *JAMA* 264(1990):822–832.
5. Martini, C. J. M. Graduate Medical Education in the Changing Environment of Medicine. *JAMA* 268(1992):1097–1105.
6. Martini, C. J. M., and Grenholm, G. Institutional Responsibility in Graduate Medical Education and Highlights of Historical Data. *JAMA* 270(1993):1053–1060 and 1116–1122.
7. Rowley, B. D., Baldwin, D. C., Jr., and McGuire, M. B. Selected Characteristics of Graduate Medical Education in the United States. *JAMA* 226(1991):933–943.
8. Jonas, H. S., Etzel, S. I., and Barzansky, B. Educational Programs in U.S. Medical Schools. *JAMA* 270(1993):1061–1068.