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POSTGRADUATE AND CAREER

SPECIALIZATION AND PROFESSIONAL ACTIVITIES

CORRELATES OF YOUNG PHYSICIANS' SUPPORT FOR UNIONIZATION TO MAINTAIN PROFESSIONAL INFLUENCE

Virginia U. Collier, Mohammadreza Hojat, Susan L. Rattner, Joseph S. Gonnella, James B. Erdmann, Thomas J. Nasca, J. Jon Veloski

Purpose: Given the recent approval of a resolution in support of physician unionization by the AMA House of Delegates, it is timely to empirically investigate the factors associated with physicians' approval of unionization. This study was designed to investigate correlates of young physicians' support for unionization.

Method: A survey was mailed to all 1987-1992 Jefferson Medical College graduates (n=1,272); 835 (66%) responded.

Results: Forty-three percent of young physicians supported, 31% did not support unionization, and 26% expressed no opinion. Surgeons, medical subspecialists, pediatricians, and hospital-based specialists were more likely to support unionization than family physicians. Significant predictors of unionization support were: negative views of the changes in the healthcare system, negative perceptions of the quality of care provided by managed care, and beliefs that physicians' independence had been impaired by changes in the healthcare system and that physicians' personal satisfaction should take precedence over societal needs in determining the future of health care. Support for unionization also correlated with physicians' perceptions that mental health patients should be referred to psychiatrists, that physician-assisted suicide should be legalized, and that the involvement of nurse practitioners in diagnosis and treatment could compromise the quality of care. Support for unionization was unrelated to gender, academic achievement, performance on licensing examinations, ratings of clinical competence, and educational debt.

Conclusions: Young physician support for unionization is a function of frustration with market-driven policies that compromise the quality of care and negatively affect physician autonomy and personal satisfaction.

Academic Medicine. 2001; 76(10): 1039-1044.

Available online at publisher's site:
http://www.academicmedicine.org/pt/re/acmed/pdfhandler.00001888-200110000-00014.pdf

STABILITY AND CHANGE OF INTEREST IN OBSTETRICS-GYNECOLOGY AMONG MEDICAL STUDENTS: EIGHTEEN YEARS OF LONGITUDINAL DATA

Iraj Forouzan, Mohammadreza Hojat

The purpose was to compare the percentage of students who maintain interest in specializing in obstetrics-gynecology during medical school with the percentages of students maintaining interest in other selected specialties, and to examine changes of interest from obstetrics-gynecology to other specialties and from other specialties to obstetrics-gynecology. A longitudinal cohort study comparing the stability of students' interests in obstetrics-gynecology and in other specialties was performed by using data on 2,889 graduates of 18 classes of Jefferson Medical College of Thomas Jefferson University between 1975 and 1992. The percentage of students who maintained interest in obstetrics-gynecology, as measured at the beginning and end of medical school, was 19%, compared with 40% for internal medicine and surgery, 39% for family medicine, and 22% for pediatrics. By the time they graduated, some students who had planned as freshman to pursue obstetrics-gynecology had changed their interests to internal medicine (19%), surgery (17%), family medicine (8%), or pediatrics (7%). In turn, obstetrics-gynecology attracted students who had initially expressed interest in other specialties: 17% from family medicine, 14% from surgery, 12% from internal medicine, and 8% from pediatrics. Despite the low percentage of students who maintained interest in obstetrics-gynecology, the overall percentage of students interested in obstetrics-gynecology at the time of graduation was somewhat greater than the percentage of students interested at the start of medical school. That only about one-fifth of the students initially interested in obstetrics-gynecology maintained their interest, and that many students' interest changed from one specialty to another, suggests that factors contributing to changes in interest need further investigation.

Academic Medicine. 1993; 68: 919-922.

MEDICAL EDUCATION AND HEALTH SERVICES RESEARCH: THE LINKAGE

Joseph S. Gonnella, Clara A. Callahan, Daniel Z. Louis, Mohammadreza Hojat, James B. Erdmann

The medical community is coming under increased scrutiny. Challenges to the integrity of the healthcare system have been raised due to reports about the prevalence of medical errors. A heightened level of vigilance is required. Equally important is the need to isolate and correct the source of any problem, perceived or real. We are faced with challenging questions: Is the selection of students and residents appropriate? Are their education and evaluation valid? These questions must be answered at least in part by understanding the climate in which the services to the patients are rendered. Otherwise, deficiencies noted in practice may be inappropriately attributed to the educational process. This article addresses the importance, implications and impact of the link between medical education and health services research. The goal of medical education is to prepare physicians to meet the challenges of practice by fulfilling their roles of clinician, educator and resource manager. Health services research can be linked to any of these physician roles. An understanding of health services is necessary to assess how well this goal is being met in the context of the changing healthcare system. A partnership between medical education and health services research is essential for academic health centers and health services institutions in assessing issues of health manpower and for the public good. Academic health centers have an important role in this partnership providing an infrastructure and expertise for both education and health services research.

Medical Teacher. 2004; 26(1): 7-11.

Available online at publisher's site:
http://taylorandfrancis.metapress.com/openurl.asp?genre=article&id=doi:10.1080/0142159032000156515

THE IMPACT OF EARLY CAREER SPECIALIZATION ON LICENSING REQUIREMENTS AND RELATED EDUCATIONAL IMPLICATIONS

Joseph S. Gonnella, Mohammadreza Hojat, James B. Erdmann, J. Jon Veloski

Purpose: It was hypothesized that physicians who pursue early career specialization in their first year of graduate medical education after medical school are likely to experience a decline in their scores on the medical licensing examination.

Method: A longitudinal prospective design was used in which 1,927 physicians who graduated from Jefferson Medical College between 1980 and 1991 were studied. Type of first-year graduate training program was the independent variable, and performance on a medical licensing examination (Part III examination of the National Board of Medial Examiners [NBME]) was the dependent variable. Scores of Parts I and II of the NBME taken in medical school, medical school class rank, and gender were the control variables.

Results: Findings showed significant differences on Part III scores among physicians in 12 different graduate programs despite statistical adjustments for baseline differences. Physicians in family medicine and emergency medicine programs obtained the highest adjusted Part III scores, followed by physicians in internal medicine and transitional programs. The next group consisted of physicians in pediatrics, obstetrics-gynecology, anesthesiology, and general surgery programs. The group with the lowest Part III scores included physicians in pathology, radiology, and psychiatry.

Implications: These findings suggest that students who meet only the minimal standards in medical school should be advised to pursue a broad training program in the first year of graduate medical education to strengthen their general clinical competence as a means to increase their chances of passing licensing examinations.

Advances in Health Sciences Education. 1996; 1(2): 125-139.

Available online at publisher's site:
http://www.springerlink.com/openurl.asp?genre=article&id=doi:10.1007/BF00159277

THE IMPACT OF EARLY SPECIALIZATION ON THE CLINICAL COMPETENCE OF RESIDENTS

Joseph S. Gonnella, J. Jon Veloski

Presented are the results of a study of the relationship between first-year postgraduate training and performance on a written test of general clinical competence. The scores of 1,514 Jefferson graduates achieved on Part III of the National Board Examinations were analyzed. Residents in family medicine, internal medicine, and flexible programs scored higher on Part III of the NBE than did those in surgery, pediatrics, obstetrics/gynecology, psychiatry and pathology. This finding was true even after a correction was made for their performance on Part II of the National Board Examination and suggests that knowledge and skills in the broad aspects of medicine are not adequately emphasized in the first year of some residency training programs. Although the differences in performance among the various training programs could be due to other factors, it is strongly suggested that changes are needed in some programs to strengthen the general capabilities of residents.

The New England Journal of Medicine. 1982; 306: 275-277.

Also in Proceedings of the Nineteenth Annual Conference on Research in Medical Education, Washington, DC, November 1980; 142-147.

SHOULD HALF OF ALL MEDICAL SCHOOL GRADUATES ENTER PRIMARY CARE? PERCEPTIONS OF FACULTY MEMBERS AT JEFFERSON MEDICAL COLLEGE

Jonathan Gottlieb, Sylvia K. Fields, Mohammadreza Hojat, J. Jon Veloski

Purpose: This study was undertaken to promote communication among faculty regarding the impact of a proposed goal that 50% of the graduates of Jefferson Medical College enter generalist careers. Since the opinions and attitudes of faculty regarding career decisions may directly or indirectly influence students, the authors investigated faculty's views of the optimal ratio of primary care to non-primary care physicians in the workforce and their perceptions of the effect on medical education, research, and healthcare delivery if the 50% goal were to be mandated.

Method: A questionnaire was mailed in January 1994 to all 694 salaried faculty of Jefferson Medical College. Respondents' opinions about the optimal primary care to non-primary care ratio and their perceptions of the effects of implementing the 50% goal on 21 areas related to medical education, research, and healthcare delivery were examined using a Likert-type scale. Obstacles perceived by non-primary care physicians as preventing their practice of primary care were also among the outcome measures.

Results: A total of 275 completed questionnaires were received (40% response rate; 72 primary care physicians, 141 non-primary care physicians, and 62 non-physicians). The median and mode of an optimal primary care to non-primary care ratio were both 50/50. Faculty, in general, perceived that implementing the 50% goal would enhance public access to primary care, physician-patient relationships, utilization of non-physicians, and the career satisfaction of generalists. They predicted decreases in costs of care, freedom of career choice, funding, and interest in research. The primary care physicians perceived greater enhancements of the image of physicians, quality of care, and satisfaction of generalists and subspecialists than did the non-primary care physicians. Gender and age did not affect the perceptions. A lack of appropriate training was identified by 45% and a lack of interest by 28% of the non-primary care physicians as major obstacles to their practice of primary care medicine.

Conclusion: The faculty members' positive and negative views of the proposed reform can provide useful information to the institution in understanding the potential impediments to increasing the numbers of generalist graduates. The generalists had significantly different views from the subspecialists about the impact of increasing the proportion of primary care physicians on healthcare delivery and research. In general the primary care physicians were more likely to view the proposed changes as beneficial than were the non-primary care physicians.

Academic Medicine. 1995; 7: 1125-1133.

FAMILY MEDICINE AND PRIMARY CARE: TRENDS AND STUDENT CHARACTERISTICS

Mary W. Herman, J. Jon Veloski

Using data from a longitudinal study of medical students at Jefferson Medical College, the authors analyzed trends in senior student interest in primary care specialties between 1971 and 1975 and selected background characteristics and performance levels of students choosing family medicine compared with those in other specialties. The study demonstrated a rising trend in the proportion of Jefferson seniors interested in family practice but not in internal medicine or pediatrics. Unlike the medical graduates entering general practice in earlier years, students interested in family medicine performed as well or better than those in all other specialties except internal medicine. Differences in the academic performance between students interested in internal medicine and family medicine remained even when only those interested primarily in clinical careers were compared. The proportion of students interested in family medicine residencies increased from 6 to 17 percent in the study period. Smaller proportions were interested in teaching and research than those in other specialties, and larger proportions intended to work in communities with populations of 100,000 or less.

Journal of Medical Education. 1977; 52: 99-106.

PRIMARY CARE AND NON-PRIMARY CARE PHYSICIANS: A LONGITUDINAL STUDY OF THEIR SIMILARITIES, DIFFERENCES, AND CORRELATES BEFORE, DURING, AND AFTER MEDICAL SCHOOL

Mohammadreza Hojat, Joseph S. Gonnella, James B. Erdmann, J. Jon Veloski, Gang Xu

Purpose: To investigate similarities and differences between physicians in primary care and non-primary care specialties on performance measures prior to, during, and after medical school, and on demographic characteristics, professional plans and preferences in medical school, professional activities, career satisfaction, perceived problems and research activities, and to predict primary - non-primary care career choices from information obtained in medical school.

Method: A questionnaire was mailed to 1,076 physicians who graduated from Jefferson Medical College between 1982 and 1986. Of those who responded (62%), 232 were primary care and 406 were non-primary care physicians (29 physicians in mixed specialties were excluded). Data from the questionnaire concerning professional activities, satisfaction, problems, and research productivities were merged with the college's longitudinal study database.

Results: Comparisons of primary care - non-primary care physicians indicated no significant difference between them on performance measures before, during, and after medical school, with the exception that non-primary care physicians had higher scores on quantitative tests before medical school, and primary care physicians scored higher on a licensing examination of general clinical skills and patient management taken during residency training. Also, compared with non-primary care physicians, those in primary care were less likely to be employed full-time, were less likely to locate in metropolitan areas, had a lower rate of academic appointment, and had a higher rate of board certification. Other results showed differences between the groups in terms of age at entrance to medical school, proportion of women, estimates during medical school of anticipated income, career plans during medical school, satisfaction with career and income, and research and scientific activities.

A logistic regression model could predict primary care - non-primary care status from specialty interest, professional plans, and interests expressed in medical school.

Academic Medicine. 1995; 70(Supplement): S17-S28.

JEFFERSON MEDICAL COLLEGE LONGITUDINAL STUDY: A PROTOTYPE FOR EVALUATION OF CHANGES

Mohammadreza Hojat, Joseph S. Gonnella, J. Jon Veloski, James B. Erdmann

Medical schools have a specific obligation to society to evaluate the effectiveness of their programs and to assess the impact of any changes in the input, processes and output of their institutions. This obligation can be better fulfilled when empirical data are collected and a longitudinal study methodology is used to investigate changes over time. The Jefferson Medical College's longitudinal study is described as a prototype for such evaluations. The goals and scope of the Jefferson longitudinal study of medical students and graduates are described, and samples of outcome studies based on Jefferson's longitudinal database are presented to demonstrate how changes can be evaluated.

Education for Health. 1996; 9: 99-113.

DIFFERENCES IN PROFESSIONAL ACTIVITIES, PERCEPTIONS OF PROFESSIONAL PROBLEMS, AND PRACTICE PATTERNS BETWEEN MEN AND WOMEN GRADUATES OF JEFFERSON MEDICAL COLLEGE

Mohammadreza Hojat, Joseph S. Gonnella, J. Jon Veloski, Shelley L. Moses

Differences between men and women graduates of one medical school in practice patterns, professional activities and problems were investigated. A questionnaire was mailed in 1986 to 600 physicians, randomly selected from 1,102 who had graduated from Jefferson Medical College of Thomas Jefferson University between 1977 and 1981. Four hundred and fifty (364 men and 86 women) responded (75%). The women were less likely than the men to be employed full-time; however, proportionately more women than men held full-time academic appointments, treated patients from low-income families, and served in underserved areas in inner cities. The women reported working fewer hours per week and having fewer patients than did the men. The women published scientific articles as often as did the men but were less likely to serve on professional committees, receive professional awards, or develop medical procedures. The women were less concerned about the oversupply of physicians and malpractice litigation. Implications of the findings for health manpower planning and practice pattern expectations are discussed.

Academic Medicine. 1990; 65: 755-761.

Also in Proceedings of the Twenty-sixth Annual Conference on Research in Medical Education, Washington, DC, November 1987; 23-27.

A PROGRAM TO INCREASE THE NUMBER OF FAMILY PHYSICIANS IN RURAL AND UNDERSERVED AREAS: IMPACT AFTER 22 YEARS

Howard K. Rabinowitz, James J. Diamond, Fred W. Markham, Christina E. Hazelwood

Context: The shortage of physicians in rural areas is a longstanding and serious problem, and national and state policymakers and educators continue to face the challenge of finding effective ways to increase the supply of rural physicians.

Objective: To determine the direct and long-term impact of the Physician Shortage Area Program (PSAP) of Jefferson Medical College (JMC) on the rural physician workforce.

Design: Retrospective cohort study.

Participants and Setting: A total of 206 PSAP graduates from the classes of 1978 to 1991.

Main Outcome Measures: The PSAP graduates currently practicing family medicine in rural and underserved areas of Pennsylvania, compared with all allopathic medical school graduates in the state and with all U.S. and international allopathic graduates. All PSAP graduates were also compared with their non-PSAP peers at JMC regarding their U.S. practice location, medical specialty, and retention for the past 5 to 10 years.

Results: The PSAP graduates account for 21% (32/150) of family physicians practicing in rural Pennsylvania who graduated from one of the state's 7 medical schools, even though they represent only 1% (206/14710) of graduates from those schools (relative risk [RR], 19.1). Among all U.S. and international medical school graduates, PSAP graduates represent 12% of all family physicians in rural Pennsylvania. Results were similar for PSAP graduates practicing in underserved areas. Overall, PSAP graduates were much more likely than their non-PSAP classmates at JMC to practice in a rural area of the United States (34% vs. 11%; RR, 3.0), to practice in an underserved area (30% vs. 9%; RR, 3.2), to practice family medicine (52% vs. 13%; RR, 4.0) and to have combined a career in family practice with practice in a rural area (21% vs. 2%; RR, 8.5). Of PSAP graduates, 84% were practicing in either a rural or small metropolitan area, or one of the primary care specialties. Program retention has remained high, with the number of PSAP graduates currently practicing rural family medicine equal to 87% of those practicing between 5 and 10 years ago, and the number practicing in underserved areas, 94%.

Conclusions: The PSAP, after more than 22 years, has had a disproportionately large impact on the rural physician workforce, and this effect has persisted over time. Based on these program results, policymakers and medical schools can have a substantial impact on the shortage of physicians in rural areas.

Journal of the American Medical Association. 1999; 281(3): 255-260.

Available online at publisher's site:
http://jama.ama-assn.org/cgi/content/abstract/281/3/255

CRITICAL FACTORS FOR DESIGNING PROGRAMS TO INCREASE THE SUPPLY AND RETENTION OF RURAL PRIMARY CARE PHYSICIANS

Howard K. Rabinowitz, James J. Diamond, Fred W. Markham, Nina P. Paynter

Context: The Physician Shortage Area Program (PSAP) of Jefferson Medical College (Philadelphia, PA) is one of a small number of medical school programs that addresses the shortage of rural primary care physicians. However, little is known regarding why these programs work.

Objectives: To identify factors independently predictive of rural primary care supply and retention and to determine which components of the PSAP lead to its outcomes.

Design: Retrospective cohort study.

Setting and Participants: A total of 3,414 Jefferson Medical College graduates from the classes of 1978-1993, including 220 PSAP graduates.

Main Outcome Measures: Rural primary care practice and retention in 1999 as predicted by 19 previously collected variables. Twelve variables were available for all classes; 7 variables were collected only for 1978-1982 graduates.

Results: Freshman-year plan for family practice, being in the PSAP, having a National Health Service Corps scholarship, male sex, and taking an elective senior family practice rural preceptorship (the only factor not available at entrance to medical school) were independently predictive of physicians practicing rural primary care. For 1978-1982 graduates, growing up in a rural area was the only additionally collected independent predictor of rural primary care (odds ratio [OR], 4.0; 95% CI, 2.1-7.6; P<.001). Participation in the PSAP was the only independent predictive factor of retention for all classes (OR, 4.7; 95% CI, 2.0-11.2; P<.001). Among PSAP graduates, taking a senior rural preceptorship was independently predictive of rural primary care (OR, 2.5; 95% CI, 1.3-4.7; P =.004). However, non-PSAP graduates with 2 key selection characteristics of PSAP students (having grown up in a rural area and freshman-year plans for family practice) were 78% as likely as PSAP graduates to be rural primary care physicians, and 75% as likely to remain, suggesting that the admissions component of the PSAP is the most important reason for its success. In fact, few graduates without either of these factors were rural primary care physicians (1.8%).

Conclusions: Medical educators and policy makers can have the greatest impact on the supply and retention of rural primary care physicians by developing programs to increase the number of medical school matriculants with background and career plans that make them most likely to pursue these career goals. Curricular experiences and other factors can further increase these outcomes, especially by supporting those already likely to become rural primary care physicians.

Journal of The American Medical Association. 2001; 286(9): 1041-1048.

Available online at publisher's site:
http://jama.ama-assn.org/cgi/content/abstract/286/9/1041

WHO IS A GENERALIST? AN ANALYSIS OF WHETHER PHYSICIANS TRAINED AS GENERALISTS PRACTICE AS GENERALISTS

Howard K. Rabinowitz, Mohammadreza Hojat, J. Jon Veloski, Susan L. Rattner, Mary R. Robeson, Gang Xu, Marilyn H. Appel, Carol Cochran, Robert L. Jones, Steven L. Kanter

Accurate data on the number of generalist physicians are needed to monitor the physician workforce and to plan for future requirements in the changing healthcare system. This study assessed the relationship between two frequently used definitions of a generalist physician: completion of graduate medical education (GME) in only a generalist discipline and physician's self-report of practicing as a generalist. Data for 4,808 physician graduates from six Pennsylvania medical schools from 1986 to 1991 were analyzed using information from the GME tracking census of the Association of American Medical Colleges and the Physician Masterfile of the American Medical Association. Of 1,291 physicians trained in a generalist discipline, 1,205 (93%) reported practicing as generalists. Conversely, of the 3,517 not trained in a generalist discipline, 3,358 (95%) were not practicing as generalists. These results indicate GME training is a valid predictor of self-reported practice and provide baseline data to monitor future changes.

Evaluation & The Health Profession. 1999; 22: 539-544.

A STATEWIDE SYSTEM TO TRACK MEDICAL STUDENTS' CAREERS: THE PENNSYLVANIA MODEL

Howard K. Rabinowitz, J. Jon Veloski, Robert C. Aber, Sheldon Adler, Silvia Ferretti, Gerald J. Kelliher, Eugene Mochen, Gail Morrison, Susan L. Rattner, Gerald Sterling, Mary R. Robeson, Mohammadreza Hojat, Gang Xu

In 1994 the Commonwealth of Pennsylvania announced a statewide Generalist Physician Initiative (GPI) modeled after The Robert Wood Johnson Foundation's GPI. Three-year grants totaling more than $9 million were awarded to seven of Pennsylvania's medical schools, including two that had already received GPI grants from the foundation. Stimulated by these initiatives, the state's six allopathic and two osteopathic medical schools decided to work together to develop a collaborative longitudinal tracking system to follow the careers of all their students from matriculation into their professional careers. This statewide data system, which includes information for more than 18,000 students and graduates beginning with the entering class of 1982, can be used to evaluate the impact of the Pennsylvania GPI, and it also yielded a local longitudinal tracking system for each medical school. This paper outlines the concept of the system, its technical implementation, and the corresponding implications for other medical schools considering the development of similar outcomes assessment systems.

Academic Medicine. 1999; 74(January Supplement): S112-S118.

DEVELOPMENT AND IMPLEMENTATION OF A LONGITUDINAL TRACKING SYSTEM FOR MEDICAL SCHOOL GRADUATES

Howard K. Rabinowitz, J. Jon Veloski, Mary R. Robeson, Gang Xu, Mohammadreza Hojat

In the evolving healthcare system in the United States, a need for balance between generalists and specialists was recognized and recommendations were made to medical schools to develop strategies to increase the number of graduates in generalist disciplines (e.g. general internal medicine, family medicine and general pediatrics). In support of these recommendations, the Commonwealth of Pennsylvania in 1994 provided financial incentives to seven medical schools in Pennsylvania for education of generalist physicians (the Generalist Physician Initiative Project, GPI). There was cognizance of a need to evaluate the effects of the program by employing a clear definition of outcomes and uniform data collection methods. In response to this need, a proposal was developed at the Center for Research in Medical Education and Health Care of Jefferson Medical College to design and implement a statewide tracking system to enable medical schools to examine individually and collectively specific educational outcomes such as graduates' specialties and career preferences. The tracking system was developed based on 30 years of experience of Jefferson medical education researchers in their well-documented Longitudinal Study of Medical Education. The tracking begins when a student enters one of the participating schools and extends throughout each individual's professional career. Data for more than 18,000 students and graduates who have matriculated in the participating medical schools since 1982 are included in the tracking database. The tracking project has resulted in the development of a computerized system that can enable medical schools nationwide to examine important educational outcomes.

Changing Medical Education and Medical Practice. 1998; 13: 8-9.

GENERALIST CAREER PLANS: TRACKING MEDICAL SCHOOL SENIORS THROUGH RESIDENCY

Howard K. Rabinowitz, Gang Xu, Mary R. Robeson, Mohammadreza Hojat, Susan L. Rattner, Marilyn H. Appel, Carol Cochran, Jeffrey J. Johnson, Steven L. Kanter, J. Jon Veloski

Context: Public and private groups undertaking initiatives to increase the number of generalist physicians require systematic data to assess the outcomes of their efforts. In particular, information about the consistency between generalist career plans at the end of medical school and completion of residency is lacking.

Method: Senior career plans as reported on the AAMC GQ and subsequent outcomes at the end of graduate medical education were studied for 2,530 physicians who graduated from six Pennsylvania medical schools in 1990-1992.

Results: Overall, 24% of the seniors planned generalist careers and 27% left their residency in family practice, internal medicine or pediatrics without subspecializing. Of the seniors planning to be generalists, 86% maintained that direction throughout graduate medical education.

Conclusion: The aggregate results of seniors' career plans are reasonably accurate predictors of career direction at the end of graduate medical education. However, as medical schools, foundations and government agencies monitor the results of their generalists initiatives, it is now clear that assessment must be based not only on students' intentions at the end of medical school and early in residency, but on career decisions throughout graduate medical education.

Academic Medicine. 1997; 72: 103-105.

ASSESSMENT OF PHYSICIANS' INTEREST IN PRIMARY CARE TRAINING/RETRAINING

Susan L. Rattner, Mary R. Robeson, J. Jon Veloski

Purpose: To assess generalists' and specialists' interest in primary care training and the factors associated with this interest.

Method: The study sample was drawn from the alumni of the Jefferson Medical College of Thomas Jefferson University (classes of 1970-1990) who were practicing in Pennsylvania. Family practitioners and general internists were defined as generalists; obstetrician-gynecologists (ob-gyns) and internal medicine subspecialists were defined as specialists. In 1995 a questionnaire was mailed consisting of 46 items assessing the physicians' interest in participating in primary care educational programs, reasons for any such interest, and preferences for content. Two items on the specialists' questionnaire asked about changing careers from specialist to generalist, and two items on the generalists' questionnaire asked about broadening the scope of their practices.

Results: The response rate was 54% (381/707). In all, 78% of the physicians expressed interest in primary care training. The generalists were more interested in primary care training than were the specialists ($p < .001$). The ob-gyns were more interested in primary care training than were the medical subspecialists ($p = .01$). Few of the medical subspecialists and no ob-gyns were influenced by plans to change careers to primary care. More of the ob-gyns than the medical subspecialists were motivated by plans to shift emphasis to provide more primary care.

Conclusion: The results suggest (1) that although many specialists have an interest in primary care training, it is rarely motivated by plans to change to primary care practice, and (2) that generalists are very interested in expanding their abilities. Both of these findings should be considered in workforce planning.

Academic Medicine. 1997; 72: 1103-1105.

CHANGING SPECIALTIES: DO ANESTHESIOLOGISTS DIFFER FROM OTHER PHYSICIANS?

Joseph L. Seltzer, J. Jon Veloski

Data for the present study were derived from a longitudinal study of medical students and graduates conducted at Jefferson Medical College since 1968. Questionnaires were available for 1,306 (78%) of the 1,676 students in the graduating classes of 1968 through 1976. The actual specialties of all but 155 of these Jefferson graduates were obtained five or more years after graduation from the alumni office of the College. The remaining 1,151 (69%) graduates were classified into 11 large specialty groupings and one group that included small numbers of graduates in ophthalmology, otolaryngology and preventive medicine programs. Thirty five (3%) of the 1,151 graduates listed anesthesiology as their specialty. Of the 31 students who had planned, prior to graduation, to go into anesthesiology, 26 actually did so. Nine physicians had changes from other specialties to anesthesiology, which represented a 26% gain. It was concluded from the study that, for whatever reasons physicians change specialties, anesthesiology does not appear to be different from other specialties in its ability to retain or gain physicians. The data in this study represent only one medical school and, if students at other medical colleges receive different types or amounts of formal training in anesthesiology, there could be a greater number of physicians changing to or from anesthesiology.

Anesthesia and Analgesia. 1982; 61(6):504-506.

ACADEMIC PERFORMANCE OF PSYCHIATRISTS COMPARED TO OTHER SPECIALISTS BEFORE, DURING, AND AFTER MEDICAL SCHOOL

Frederick S. Sierles, Michael J. Vergare, Mohammadreza Hojat, Joseph S. Gonnella

Objective: This study was designed to compare psychiatrists with other physicians on measures of academic performance before, during, and after medical school.

Method: More than three decades of data for graduates of Jefferson Medical College (N=5,701) were analyzed. Those who pursued psychiatry were compared to physicians in seven other specialties on 18 performance measures. Analysis of covariance was used to control for gender effect.

Results: Compared to other physicians, psychiatrists scored higher on measures of verbal ability and general information before medical school and on evaluations of knowledge and skills in behavioral sciences during medical school, but they scored lower on United States Medical Licensing Examinations step 3.

Conclusions: The results generally confirmed the authors' expectations about psychiatrists' academic performance. More attention should be paid to the general medical education of psychiatrists.

American Journal of Psychiatry. 2004; 161(8): 1477-1482.

Available online at publisher's site:
http://ajp.psychiatryonline.org/cgi/content/abstract/161/8/1477

PERFORMANCE ON THE NBME PART II EXAMINATION AND CAREER CHOICE

Tennyson Williams, Larry Sachs, J. Jon Veloski

In the present study the authors hypothesized that the NBME Part II examination subtest scores of students selecting various specialty residency programs would demonstrate profiles that were unique for each specialty chosen. The hypothesis was based on the assumption that students will seek careers dealing with content with which they are comfortable and that this comfort derives from successful academic performance.

Separate but parallel analyses were conducted on data from the Jefferson Medical College (JMC) and the Ohio State University College of Medicine (OSU). Students from each school who took the NBME Part II Examination from 1978 through 1984 were grouped according to their residency choice: family medicine, internal medicine, obstetrics/gynecology, pediatrics, psychiatry, surgery and "other." The sample sizes totaled 1,534 for JMC and 1,429 for OSU.

One of the major results was the similarity of profiles across the two schools. The students who selected a residency for which there is a major subtest in the NBME Part II examination showed a higher performance on the subtest corresponding to their residency choice than on any other subtest. The family medicine group and the "other" group did not have any subtest means significantly different than the group mean. The magnitude of the difference between scores on the subtest of the specialty chosen and other subtests is impressive. The authors consider that counseling to enter particular specialties for students who have scores unusually high on one subtest would be appropriate. Even when a student scores very high on two subtests, the career decisions are made easier. In such cases, students should give high priority to personal factors in deciding between the two disciplines.

Journal of Medical Education. 1986; 61: 979-981.

MEDICAL STUDENTS WHO ENTER GENERAL SURGERY RESIDENCY PROGRAMS: A FOLLOW-UP BETWEEN 1972 AND 1986

Philip J. Wolfson, Mary R. Robeson, J. Jon Veloski

It is generally assumed that most students who enter surgical residency programs each year are destined for careers in the surgical field–general surgery, a specialty of general surgery, or a related specialty (ENT, orthopaedic surgery, ophthalmology or urology). While it has always been recognized that a small number of surgical residents do leave the surgical field, little has been reported about what actually happens to them. We undertook this long-term follow-up of our graduates to find out what proportion do end up in a surgical field and to identify any patterns of change that may have taken place over the past fifteen years. Between 1972 and 1986, 459 JMC graduates (about 14 percent) entered PGY-1 programs in general surgery. Using recent follow-up data available from the college's alumni office and the American Medical Association, we classified each of the graduates into one of three groups: 1) those remaining in general surgery/subspecialty, 2) graduates in a specialty within the surgical field and 3) those in a specialty outside of the surgical field (anesthesiology, dermatology, family practice, emergency medicine, pediatrics, pathology or radiology). The three groups were compared across years on demographics, academic credentials and surgery program director's ratings of their performance in PGY-1.

Throughout the fifteen-year time period, approximately 70% of the graduates did remain in general surgery/subspecialty while about 15% moved to one of the other specialties within the surgical field. Although the percentage of surgery residents who left the surgical field remained constant throughout nearly two decades, there were statistically significant changes in the academic credentials of the residents who remained within the surgical field compared with those who left. During the mid-1970s the residents who remained within the surgical field had better academic credentials on average as measured by medical school grades and National Board scores (about 40 points higher) than those who switched out of the surgical field. However, in the more recent time period of the late 1970s and the early 1980s, the trend reversed. Those residents who left the surgical field had academic credentials that were, on average, equal to or better than those who remained. There were no differences between the groups on age, sex, and program director's ratings of their performance in the first year of the surgical residency.

These results have important implications for student counseling and resident selection. They suggest that some good students are being recruited into surgical programs but are later being lost in major career switches. Studies need to be undertaken to find out why these students are changing. Perhaps these changes are related to young residents' preferences for specialties that offer more controllable lifestyles than the surgical field.

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PERCEPTIONS OF PRACTICE PROBLEMS ENCOUNTERED BY FAMILY PHYSICIANS, PEDIATRICIANS AND ORTHOPEDIC SURGEONS

Gang Xu , Timothy P. Brigham, J. Jon Veloski , Joseph F. Rodgers

Information about physicians' practice problems was solicited through a structured questionnaire mailed to a group of family physicians, pediatricians, and orthopedic surgeons. Overall, a lack of personal time was the major concern across the three groups of physicians. Comparisons among the three types of physicians revealed two patterns: Family physicians reported more concerns in the "interpersonal" dimension, whereas orthopedic surgeons had more concerns in the "legal-economic" dimension. These patterns of differences persisted with two variables controlled: gender and time period in which they completed their residency program. These findings indicate that physicians' concerns in their practice vary among the specialties, and they imply that the changed economy and reimbursement system might have more impact on one than the other. Thus the effectiveness of residency training and continuing education might be improved by emphasizing the specialty-related problems in practice.

Evaluation & The Health Professions. 1993; 16: 119-129.

PRIMARY CARE AND NONPRIMARY CARE PHYSICIANS' CONCERNS IN PRACTICE AND PERCEPTIONS OF MEDICAL SCHOOL CURRICULUM

Gang Xu, Mohammadreza Hojat, Timothy P. Brigham, Mary R. Robeson, J. Jon Veloski

The purpose of the present study is to address the issue of physicians' concerns in practice and their perception of a medical school's curriculum with an emphasis on comparisons between primary and nonprimary care physicians. The sample consisted of 663 physicians who graduated from Jefferson Medical College (JMC) between 1982 and 1986 and also responded to a mailed questionnaire. Comparisons were made between physicians in primary care (n = 235) and in nonprimary care (n = 429) specialties on their responses regarding concerns in medical practice and evaluation of the medical school curriculum. Primary care physicians were more concerned about the time for their professional development whereas nonprimary care physicians were more concerned about an oversupply of physicians in their specialties, prospective hospital payment, and malpractice litigation. Regardless of the specialties, the physicians overall seemed very concerned about their personal time. Interpersonal skills were regarded by all respondents as an important aspect of the medical school's curriculum. The importance of psychological, social, and cultural factors in the curriculum was strongly supported by these physicians' responses, particularly among primary care and women physicians.

Evaluation and The Health Professions. 1994; 17: 436-445.

FACTORS ASSOCIATED WITH CHANGING LEVELS OF INTEREST IN PRIMARY CARE DURING MEDICAL SCHOOL

Gang Xu, Mohammadreza Hojat, Timothy P. Brigham, J. Jon Veloski

Background: Previous studies have indicated that there is a need for an understanding of the effect of medical school curricula on students' choice of primary care specialties. The present study examined students' change of interest in primary care as related to their clinical experience during medical school and to other variables.

Method: A total of 1,911 (74%) responded to a national survey of all allopathic medical school graduates in early 1993. Their reported change of interest in primary care during medical school was cross-tabulated with their clinical experiences in medical school, their demographics, their interest prior to medical school, and their future plan in practice.

Results: Students' increased interest in primary care during medical school was strongly associated with the electives they took in primary care. The positive change of interest in primary care is also associated their interest prior to medical school and their future plan in primary care in later career.

Conclusion: Schools wishing to implement a program to increase the number of graduates entering primary care specialties may consider increasing the number of primary care elective courses to increase students' interests and help them make a decision to enter and remain in primary care specialties.

Academic Medicine. 1999; 74: 1011-1015.

EMERGENCY MEDICINE CAREER CHANGE: ASSOCIATIONS WITH PERFORMANCES IN MEDICAL SCHOOL AND IN THE FIRST POSTGRADUATE YEAR AND WITH INDEBTEDNESS

Gang Xu, Mohammadreza Hojat, J. Jon Veloski

Objective: Emergency medicine has been identified as the specialty that has gained the most young physicians who have changed their careers. To identify factors that may have contributed to such career changes, the authors compared the characteristics of three groups of physicians trained at their medical school: those who chose and stayed in emergency medicine, those who migrated into emergency medicine from other specialties, and those who moved out of emergency medicine.

Methods: A prospective longitudinal study was conducted. The sample consisted of physicians who chose emergency medicine as their careers at graduation and stayed in the specialty (n = 24), those who migrated from other specialties into emergency medicine (n = 51), and those who moved out of emergency medicine (n = 10). This sample was obtained from a total of 2,173 graduates of Jefferson Medical College between 1978 and 1987. The three groups of physicians were compared according to their academic performances both during medical school and after graduation. The dependent variables were freshman and sophomore grade point averages (GPAs), written clinical examination scores, scores on National Board of Medical Examiners examination (Parts I, II, and III), and residency program directors' ratings. Age and indebtedness at medical school graduation and board certifications status also were examined.

Results: Those physicians who stayed in emergency medicine and those who migrated from other specialties into emergency medicine had similar measures of academic performance, but both of these groups had higher academic performance measures and higher board certification rates than did the physicians who moved out of emergency medicine. Those who stayed in emergency medicine had the highest mean debt in the senior year of medical school.

Conclusions: High academic performance and high indebtedness are factors associated with choosing or staying in the specialty of emergency medicine.

Academic Emergency Medicine. 1994; 1: 443-447.

THE CHANGING HEALTHCARE SYSTEM: A RESEARCH AGENDA FOR MEDICAL EDUCATION

Gang Xu, Mohammadreza Hojat, J. Jon Veloski, Joseph S. Gonnella

The volatility in the U.S. healthcare system due to unprecedented changes in its organization, financing, and delivery, coupled with a growing physician surplus in certain areas, suggests the need for a research agenda to investigate the impact of these forces on the educational programs of medical schools. This article discusses the potential impact of trends in the healthcare environment on the following key aspects of undergraduate medical education: admissions, faculty, curriculum, and educational outcomes. A representative set of research questions intended to stimulate inquiry and guide empirical studies in each of the four domains is proposed.

Evaluation and The Health Professions. 1999; 22(2): 152-168.

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A NATIONAL STUDY OF THE FACTORS INFLUENCING MEN AND WOMEN PHYSICIANS' CHOICES OF PRIMARY CARE SPECIALTIES

Gang Xu, Susan L. Rattner, J. Jon Veloski, Mohammadreza Hojat, Sylvia K. Fields, Barbara Barzansky

Background: Despite a recent increase in the percentage of graduating U.S. medical students planning to pursue generalist careers, interest in primary care among students is still far below what it was in the early 1980s and falls well short of the stated goal of the Association of American Medical Colleges that half of all graduates should choose generalist careers. Also during the past decade, the number of women students and physicians has increased. Given the importance of concerns regarding the primary care work force, it is timely to examine the relationship between gender and other factors that influence the decision to enter primary care.

Method: Totals of 1,038 (65%) men and 558 (35%) women primary care physicians selected from the 1983 and 1984 graduates of all allopathic U.S. medical schools were surveyed in early 1993. Gender comparisons were made on the 19 variables that influenced the physicians' decisions to enter primary care specialties and on the six factor scores derived from a factor analysis of these 19 variables. Also included in the gender comparisons were characteristics of practice, populations served, timing of making the decision to enter primary care, and personal demographic information.

Results: Men, more than women, were influenced to become primary care physicians by early role models. Women, more than men, were influenced by personal and family factors. Overall, medical school experience and personal values are two important factors that explained the largest variances of the 19 predictor variables influencing the physicians' choices of primary care disciplines. There was no gender difference in place of origin, family income as a child, timing of the decision to become a primary care physician, or the amount of debt upon graduation.

Conclusion: The nationwide study of primary care physicians indicates that men and women physicians differ in their perceptions of the relative importances of factors influencing the choice of a primary care specialty. Gender-specific factors should receive more attention in the development of successful strategies to attract more medical students into primary care specialties.

Academic Medicine. 1995; 70: 398-404.

COMPARING THE ACADEMIC PERFORMANCES OF GERIATRICIANS AND OTHER FAMILY PHYSICIANS AND INTERNISTS

Gang Xu, J. Jon Veloski

This study compared the academic performances of geriatricians and other family physicians and internists. The sample consisted of the graduates of Jefferson Medical College from 1971 through 1981 whose first board certifications were in either family medicine or internal medicine. Of the family physicians, there were 14 whose second or third certificates were in geriatrics. Of the internists, there were 26 whose second or third certificates were in geriatrics. The graduates who had second or third certificates in areas other than geriatrics were removed from the analysis, leaving 250 family physicians and 197 internists to be compared with the geriatricians in their respective fields.

The graduates who were board certified in family medicine and held geriatrics certificates had better academic performances during medical school than did those who were certified only in family medicine. They had significantly ($p<.05$) higher freshman and sophomore grade-point averages, clinical clerkship examination scores, and National Board of Medical Examiners (NBME) Part I and Part II examination scores. There was no significant difference between the two groups on the NBME Part III. The academic performances of the graduates who were board-certified in internal medicine and held geriatrics certificates were not significantly different from those of the graduates who were certified only in internal medicine. In addition, the academic performances of the geriatricians certified in family medicine were compared with those of the geriatricians certified in internal medicine, showing no significant difference.

Geriatrics is becoming a well-defined field and is one rooted in primary care. This study addresses the public concern about the quality of geriatricians and shows that highly qualified physicians in family medicine and internal medicine are obtaining geriatrics certificates–a positive outcome worthy of investigations in other studies.

Academic Medicine. 1993; 68: 388.

FACTORS INFLUENCING PHYSICIANS' DECISIONS TO REMAIN IN EMERGENCY MEDICINE

Gang Xu, J. Jon Veloski

Our study examined the factors influencing physicians' decisions to continue their careers in emergency medicine (EM). A questionnaire was sent to 53 graduates (classes of 1981-1990) of Jefferson Medical College whose specialty choices in their senior year had been EM. They were asked to indicate to what extent each of 23 factors had encouraged them to remain in EM (with 0 = no influence, 1 = minor positive influence, and 4 = major positive influence). Thirty-six physicians (68%) returned usable questionnaires. For the 33 who had remained in EM, the mean scores for the most important factors were as follows: challenging diagnostic problems, (3.38); predictable working hours, (3.03); intellectual content of the specialty, (2.93); income, (2.93); and opportunity to deliver primary care, (2.91). The mean scores for the least important factors were as follows: examples of family or friends, (0.67); minimum patient contact, (0.67); fewer malpractice problems, (0.83); and encouragement from other physicians, (1.16). The level of educational debt was also rated as minor influential factor, (1.43).

This study revealed that those who chose EM highly valued the predictable working hours, which reinforces the notion of the importance of lifestyle in influencing physicians' career choice. We previously reported for this same group of physicians that their actual amount of educational indebtedness was highest as compared with the indebtedness of other specialty groups. However, the self-reported data presented here suggest that these physicians' decisions to be emergency doctors were not influenced by indebtedness. This leads us to speculate that physicians might not be consciously aware of the influence of indebtedness on career decisions even though it exists.

Academic Medicine. 1992; 67: 413.

A COMPARISON OF JEFFERSON MEDICAL COLLEGE GRADUATES WHO CHOSE EMERGENCY MEDICINE WITH THOSE WHO CHOSE OTHER SPECIALITIES

Gang Xu, J. Jon Veloski

Using the database of the Jefferson Medical College Longitudinal Study of students and graduates, fifty-three Jefferson graduates who chose emergency medicine (EM) over the decade from 1981 through 1990 were compared with the other Jefferson graduates during that decade who chose other specialties. As seniors, those who chose EM had the highest debt of seniors going into any specialty. However, the mean peak income they expected was higher than expected by the other nonsurgeons, although it was below that expected by the surgeons. The EM group compared favorably with those who chose other specialties in terms of their academic records and had the highest mean Part III score on the National Board of Medical Examiners examination of any of the groups studied. The students who chose EM also indicated their great willingness to see patients from low-income households and were willing to spend more of their practice time serving these groups than were the students who chose the other specialties. The authors discuss these findings as related to the nature of EM and medical school graduates' choices of specialties.

Academic Medicine. 1991; 66: 366-368.

COMPARISONS AMONG THREE TYPES OF GENERALIST PHYSICIANS: PERSONAL CHARACTERISTICS, MEDICAL SCHOOL EXPERIENCES, FINANCIAL AID, AND OTHER FACTORS INFLUENCING CAREER CHOICE

Gang Xu, J. Jon Veloski, Barbara Barzansky, Mohammadreza Hojat, James J. Diamond, Vincent M.B. Silenzio

A national survey of family physicians, general internists, and general pediatricians was conducted in the U.S. to examine differences among the three groups of generalist physicians, with particular regard to the factors influencing their choice of generalist career. Family physicians were more likely to have made their career decision before medical school and were more likely to have come from inner-city or rural areas. Personal values and early role models play a very important role in influencing their career choice. In comparison, a higher proportion of general internists had financial aid service obligations, and their choice of the specialty was least influenced by personal values. General pediatricians had more clinical experiences either in primary care or with underserved populations, and they regarded medical school experiences as more important in influencing their specialty choice than did the other two groups. Admission committees may use these specialty-related factors to develop strategies to attract students into each type of generalist career.

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http://www.springerlink.com/openurl.asp?genre=article&id=doi:10.1007/BF00162916

CHANGING INTEREST IN FAMILY MEDICINE AND STUDENTS' ACADEMIC PERFORMANCE

Gang Xu, J. Jon Veloski, Mohammadreza Hojat

In recent years, there has been declining interest in family practice among medical school graduates nationwide. Although a change in the proportion of students interested in certain specialties does not necessarily mean a corresponding change in their academic credentials, some recent studies reported a significant decrease in the percentage of top students choosing careers in primary care specialties, including family practice, and a significant increase in the percentage of these top students choosing controllable lifestyle specialties such as anesthesiology, radiology, pathology, and emergency medicine. The study addresses this general question: How do students who choose family medicine compare academically with those who choose other specialties?

The sample consisted of all graduates from Jefferson Medical College from 1980 through 1991 (a total of 12 years). Students' performance in medical school and on the National Board of Medical Examiners (NBME) examinations were collected prospectively as a part of a longitudinal study. Also included in this study was information gathered through a questionnaire given to all seniors before they received the results of the National Resident Matching Program, which included their plans for specialization after the first year of postgraduate training and the community in which they planned to work.

Of the 2,263 graduates studied, 385 (17%) preferred family practice, and the proportion decreased from 18.2% in 1980-1982 to 14.7% in 1989-91. In comparisons of academic performances during medical school, the family medicine group performance was comparable with that of most other specialty groups. Of particular note here were the NBME Part III scores where the family medicine group was ranked the second highest and is scored significantly higher than each of the remaining five specialty groups. There was no significant difference in any one of the four measured areas of residency program director ratings among the specialty groups compared. Consistent with national statistics, this study sample demonstrated a decline in the number of students preferring family practice. However, the performance of those in the family medicine group was comparable to that of those in other specialties.

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PHYSICIANS' INTENTION TO STAY IN OR LEAVE PRIMARY CARE SPECIALTIES AND VARIABLES ASSOCIATED WITH SUCH INTENTION

Gang Xu, J. Jon Veloski, Mohammadreza Hojat, Sylvia K. Fields

A national mail survey of primary care physicians was conducted in 1993 to examine the differences between those who planned to leave and those who planned to stay in primary care disciplines. The physicians who planned to stay in primary care were those who, at the time of choosing primary care specialties, were more influenced by factors such as personal social values, religion, and the presence of a role model prior to medical school. Physicians' race, sex, workload, debt, place where they grew up, family income as a child, and timing when they made the decision to enter primary care disciplines are not associated with their plans to stay in or leave primary care disciplines. Findings indicated that personal social values, religious beliefs, and the presence of a role model prior to medical school not only influenced physicians' choice of primary care, but had a lasting effect on their commitment to such choice.

Evaluation and The Health Professions. 1995; 18: 92-102.

FACTORS INFLUENCING PRIMARY CARE PHYSICIANS' CHOICE TO PRACTICE IN MEDICALLY UNDERSERVED AREAS

Gang Xu, J. Jon Veloski, Mohammadreza Hojat, Robert M. Politzer, Howard K. Rabinowitz, Susan L. Rattner

Purpose: To examine the factors associated with primary care physicians' practice location in underserved areas.

Method: The sample was randomly drawn from practicing generalist physicians who graduated in 1983 and 1984 from MD-granting and DO-granting medical schools. The survey was conducted in 1993. A multiple logistic regression model with maximum likelihood procedures was used in which physician's practice location in an underserved area (1=Yes; 0=No) was the dependent variable and 15 other variables as regressors.

Results: A 75% response rate was obtained. Physicians' underrepresented minority status, the area where the physicians grew up, the interests expressed prior to medical school to care for the underserved, and financial aid obligations were the most significant predictors in the model. The physicians' experiences with primary care or with underserved patients, both during medical school and in residency, were not associated with their decision to locate in an underserved area.

Conclusions: Physician's personal and demographic characteristics are the most important factors influencing decisions to practice in underserved areas. Admission policies that are targeted to applicants with minority backgrounds, who grew up in a rural or inner city area, and who express a strong interest prior to medical school to practice in the underserved area would likely increase physician manpower in these areas. Supporting the target individuals who have financial obligations is an additional crucial factor.

Academic Medicine. 1997; (Supplement 1 to 72): S109-S111.