

**STUDY GROUP ON MINORITY MEDICAL
EDUCATION:
FINDINGS FROM LITERATURE SEARCH
AND ANECDOTAL DATA**

FINAL REPORT

Contractor

The American Medical Student Association/Foundation
1902 Association Drive
Reston, Virginia 20191

Authors

American Medical Student Association/Foundation
Student National Medical Association
Asian-Pacific Medical Student Association
Association of Native American Medical Students
Chicano Medical Student Association
National Network of Latino American Medical Students

Sponsor

Division of Medicine
Bureau of Health Professions
Health Resources and Services Administration
Department of Health and Human Services

This report is made pursuant to Purchase Order No. 103HR951182P000-000.
September 20, 1996

TABLE OF CONTENTS

Executive Summary	3
Introduction	4
Trends in Minority Medical Education.....	6
Acceptance Rates	7
Minority First Years.....	8
Total Minority Enrollment	9
Minority Attrition and Retention	9
Minority Residents and Faculty	10
Minority Students in High School and College.....	11
Summary of Trends.....	11
Financial Issues.....	12
Psychosocial Issues for Minority Medical Students	14
Model Programs: “Solutions to the Problem”	14
Medical Schools.....	14
Pre-matriculation	15
Post-baccalaureate.....	16
Undergraduate.....	16
Grades 1-12.....	17
Conclusion	17
Summary of Focus Groups.....	17
Recruitment of Subjects	17
Study Population.....	18
Methodology.....	18
Focus Group Findings	18
Conclusion	23
Conclusion and Recommendations	23
Recommendations.....	24
Endnotes	52

TABLES

1. Minority applicants and first year enrollees, 1965-1996	8
2. Number and percentage of first year medical students by race, selected years from 1968-1994.....	9
3. Patient profile of minority resident practices	10

APPENDICES

- A. Study Group on Minority Medical Education
- B. Annotated Bibliography on Minority Medical Education
- C. Student Questions

EXECUTIVE SUMMARY

The American Medical Student Association/Foundation (AMSA) received a purchase order from the Bureau of Health Professions/Division of Medicine to convene a select group of medical students, residents, and physicians to study minority medical education. The study focused on the needs and concerns of minority students in medical school as well as the current status of recruitment and retention practices in medical school. AMSA executed the study by conducting an extensive literature search and gathering anecdotal data.

To initiate the study, AMSA formed a working group of students and physicians representing Asian-Pacific Medical Student Association, Association of Native American Medical Students, Chicano Medical Student Association, the National Network of Latino American Medical Students, the Student National Medical Association, and AMSA's minority members. The members met twice in person and numerous times on conference call. The members themselves, led by AMSA's President, conducted the majority of the research, reviewed the literature, analyzed the findings, and collected anecdotal data. The study delved into the following issues: application and acceptance, retention and model programs, function of minority affairs offices, student well-being, and discrimination. In order to determine the validity of the research findings in gauging the experience of the minority medical student, the literature review was complemented with a collection of anecdotal evidence from focus groups convened primarily at minority student meetings. These focus groups were convened outside the scope and cost of this procurement and independently supported by AMSA and other collaborating student organizations.

AMSA found that increases in the number of under-represented minorities enrolled in medical school have only paralleled the increases in the total number of students, and no gains have been evident since the early 1970's. The study revealed that one of the factors contributing to the lack of progress in minority enrollment has been the inability of elementary and high school systems attended by minorities to adequately prepare students for college level science and provide role models in the medical profession to students. In addition, financial barriers exist for minority students pursuing college and graduate studies. Psychosocial factors, not academic difficulty, were cited as major factors inhibiting minority performance in medical school. Under-represented minority students also perceive a lack of respect by their colleagues and faculty toward their ambitions to pursue medical careers. In summary, the current study left many unanswered questions. AMSA has developed a list of questions that need to be explored further to understand the gaps in the current literature. These questions may be administered through an extensive survey of all medical schools conducted without federal support or through a voluntary self-assessment process for a school to undertake. Further probing will help determine the direction and progress of such national programs as the Association of American Medical Colleges' *3000 by 2000*

**Minority Medical Education Study Group
FINAL REPORT**

**Purchase Order No. 103HR951182P000-000
Deliverable No. 8**

Introduction

In framing the issues addressed by this work, it is best to begin with the historical perspective of under-represented minorities in medicine. As late as 1970, there were only 500 minority medical students of all ethnicities enrolling each year in medical schools across the country. Nearly three quarters of these minority students were at Meharry and Howard, two traditionally black medical colleges, highlighting the gross under-representation of minority students in the remaining schools in the country. This situation existed despite the significant gains in the United States as a whole in the area of civil rights. In 1970, a correction was necessary to increase minority representation. In response, the Association of American Medical Colleges (AAMC) established a two part goal: minority students would represent 12% of the entering class by 1975; and a central loan program for minorities would be created.

Although the situation had improved significantly by 1976, neither goal was reached. The loan program was never established, but the number of minority students had increased. Through a combination of affirmative action programs, AAMC initiatives, and aggressive recruitment, schools were able to attract much higher numbers of minority applicants. Minorities represented 9% of all entering students, and almost 1400 entered medical school across the country that year. With further incentives and leadership within the academic medical community, the AAMC's declared goal of 1800 students and 12% of entering classes as minority students seemed attainable.

In the mid-80s, the content of the debate broadened. Until this point, the purpose of increasing minorities in medicine had been solely an issue of equal access to educational opportunities. New studies demonstrated that minority physicians were more likely than non-minority physicians to practice in underserved, low-income minority communities.^{i ii} Now, increasing minorities in medicine served the dual purpose of improving both educational equity and national health indices for the minority population.

Twenty years later, with a vantage point on two decades of programs designed to increase minority enrollment and retention, the view is one of stagnation. Though the numbers of minority students entering medical school has reached 2000, the percentage of minority students in entering classes has remained essentially fixed since 1976. While women, for example, are reaching a level in medical school classes equal to that in the general population, minorities have lagged ever behind the outside world. Although the number of total medical students increases, as does the number of minority applicants, little progress has been made to achieve real increases in minority enrollment. Despite the aggressive efforts of the *3000 by 2000* initiative by the AAMC, a decrease in the number of entering minority students was seen this year. In the face of this decrease,

Congress threatens to cut funding to programs that have been used to recruit minority students, as well as the overall funding of medical education. With legislation aimed at destroying affirmative action programs in the United States, we can only fear what effect it will have on minority student representation.

Within this context, a realistic evaluation of the obstacles to increasing minority representation and models to overcome them are vital. Most of the research existing on minority experiences in medical education has focused on purely statistical indices, such as performance on U.S. Medical Licensing Exam (USMLE) exams correlated with academic ratings, match preferences of minority students, and other measurable experiences. Psychosocial issues are difficult to measure and quantify, yet this aspect may be among the most important in good retention strategies. A comprehensive examination of the content of this literature is lacking. AMSA has performed this review. AMSA formed a working group of students and physicians representing the Student National Medical Association, the National Network of Latin American Medical Students, Asian-Pacific Medical Student Association, Chicano Medical Student Association, Association of Native American Medical Students, and AMSA's minority members. See Appendix A.

The Study Group members met twice in person and numerous times on conference call. The members themselves, led by AMSA's President, conducted the majority of the research, reviewed the literature, analyzed the findings, and collected anecdotal data. In order to determine the validity of the statistical approach in gauging the experience of the minority medical student, AMSA has also complemented the review with a collection of anecdotal evidence from focus groups which were convened outside the scope and cost of this procurement and independently supported by the American Medical Student Association (AMSA) and collaborating student organizations.

This report begins with an examination of the formal literature on this subject. An annotated bibliography accompanies this report in Appendix B. Complementing these studies is a review of other factors that affect minority recruitment and retention, such as financial issues. A review of model solutions is offered that seem to be effective in implementing efficient recruitment and retention strategies for the coming decades. These data are followed by the results of the focus groups, which serve to raise several significant issues with respect to the true experience of minority medical students and their experience in medical education.

Equally important to all of this work is the level of action taken by the government to assure that medical education continues to attempt to reflect the greater diversity of society. The great unanswered question in all of these studies, based on the broader historical view, is whether any increase in minority representation is possible if programs such as Health Education Assistance Loan (HEAL), the National Health Service Corps (NHSC), and affirmative action fall by the wayside. The very real possibility exists that recruitment and retention may face severe decreases (as heralded by this year's decrease) if the supports that helped to diversify American medicine in the 1970's are removed.

Trends in Minority Medical Education

To have a discussion about the status of minorities in medicine it is important to review statistics and trends. In the literature, there is some discordance among statistics depending on how racial groups are defined and classified. The following discussion references all statistics and care was taken for accuracy. Some of the trends reviewed here include the numbers of minority applicants to medical school, numbers of minorities in medical school, and numbers of minority physicians, among others. The racial make up of the general population will also be reviewed. For clarification, under-represented minority will be defined as African American, Mexican American, mainland Puerto Rican, and Native American, in concordance with the AAMC.^{iii iv}

In 1960, the U.S. faced an overall shortage of health care providers. The federal government provided funding which helped to increase the number of medical schools from 86 schools in 1960 to eventually reach 127 schools in 1986. In tandem, the number of applicants and enrolled medical students increased until their peak in 1975.^{v vi} After 1975, the number of total applicants began decreasing, but the number of total first years enrolled continued to increase, reflecting a less competitive application process for the majority of students.^{vii viii}

Against this backdrop was the situation for minority medical students. Until the mid-1960s, Howard and Meharry were graduating 75% of African American physicians while 110 schools were producing the other 25%.^{ix} Efforts during the civil rights movement helped non-minority schools to increase their minority enrollment. By 1968, first year African American enrollment in predominantly white medical schools reached 50% of first year African American enrollment in the predominantly African American medical schools.^x Even with this increase, the proportion of minority students in medicine still lagged far behind the proportion of minorities in the general population. In 1968, the AAMC passed a resolution calling for greater diversity in medical schools, stating "Medical schools must admit increased numbers of students from geographic areas, economic backgrounds and ethnic groups that are now inadequately represented."^{xi}

By 1970, the situation for minorities was still bleak. Minorities comprised 12% of the population, but only 3% of all physicians. In order to bridge this gap, the AAMC issued a landmark report defining the goal of achieving equal opportunity by eliminating inequitable barriers to the medical profession. The task force recommended that "U.S. medical schools increase the representation of minorities in medical school from 2.8% in 1970 to 12% in 1975." The report was endorsed by the American Medical Association, the National Medical Association, President Nixon, the White House Staff and the Secretary of Health, Education, and Welfare.^{xii xiii xiv xv xvi xvii}

Acceptance Rates

Based on the grade point average (GPA) and Medical College Admission Test (MCAT) scores of minority and non-minority applicants, under-represented minorities have a relatively higher acceptance rate. In 1975, 43% of minority applicants were accepted compared to 35% of non-minority applicants.^{xviii xix} Since the 1970s, the gap between majority and minority MCAT scores has been gradually narrowing, yet the acceptance rate for minorities has been declining.^{xx xxi} By 1978-79, the acceptance rate for African Americans dropped to 38% and the overall acceptance rate for minorities dropped to 41%. The non-minority acceptance rate rose to 45% due to decreasing applicants and increasing numbers of first year enrollees, thereby becoming less competitive (See Table 1).^{xxii xxiii xxiv}

This trend continued throughout the 1980s. For majority students, acceptance to medical school was less competitive than in previous years. Due to an increase in African American applicants with no change in acceptance rates, acceptance for African Americans was more competitive.^{xxv} Acceptance rates eventually increased for both groups, yet minority rates lagged behind majority acceptance rates. By 1991, 48% of under-represented minority (URM) applicants were accepted compared to 53.5% of white applicants.^{xxvi xxvii xxviii}

Table 1. Minority applicants and first year enrollees, 1965-1996 ^{xxix}

1st Year Class	Number of URM Applicants	URM Applicants (Percent of Total)	Total Number of Applicants	Number of URM Enrolled 1st year	URM Enrolled 1st year (Percent)	Number of Total Enrolled 1st year
1965-1966			18,703			8,759
1968-1969			21,118	292	3.0%	9,863
1970-1971	1,250	5.0%	24,987	808	7.1%	11,348
1974-1975	3,236	7.6%	42,621	1,473	10.0%	14,763
1975-1976	3,286	7.8%	42,303	1,391	9.1%	15,351
1976-1977	3,592	8.5%	42,155	1400	9.0%	15,613
1977-1978	3,599	8.9%	40,567	1450	9.0%	16,136
1978-1979	3,321	9.1%	36,636	1443	8.7%	16,501
1979-1980	3,379	9.3%	36,141	1547	9.1%	16,930
1980-1981	3,381	9.4%	36,100	1548	9.0%	17,204
1981-1982	3,541	9.6%	36,727	1671	9.7%	17,268
1982-1983	3,453	9.7%	35,730	1,387	8.4%	16,567
1983-1984	3,440	9.8%	35,200	1,399	8.5%	16,480
1984-1985	3,578	10.0%	35,944	1,440	8.8%	16,395
1985-1986	3,321	10.1%	32,893	1,388	8.5%	16,268
1986-1987	3,203	10.2%	31,323	1,430	8.9%	16,103
1987-1988	2,988	10.6%	28,123	1,441	9.0%	15,927
1988-1989	2,896	10.8%	26,721	1,431	9.0%	15,969
1989-1990	3,049	11.3%	26,915	1,480	9.3%	15,867
1990-1991	3,172	10.8%	29,243	1,470	9.2%	15,998
1991-1992	3,605	10.8%	33,301	1,584	9.8%	16,211
1992-1993	4,034	10.8%	37,410	1,827	11.2%	16,289
1993-1994	4,715	11.0%	42,808	1,863	11.4%	16,307
1994-1995	5,060	11.2%	45,365	2,014	12.4%	16,287
1995-1996	5,146	11.0%	46,591	2,010	12.4%	16,253

Minority First Years

Minorities comprised 3% of the 1968 entering class, including 266 African Americans, 20 Mexican Americans, 3 Native Americans, and 3 Puerto Ricans.^{xxx} Propelled by federal funding, eighteen new medical schools opened in 1970. These new schools created 4,788 additional positions. African Americans, Native Americans, Mexican Americans and Puerto Ricans received 20% of these new positions.^{xxxi} In 1974, minority representation in the first year class peaked at 10.0%. Although this number was short of the 1975 goal, the percentage of minorities enrolled did not continue to increase, but instead plateaued from 1974-1991.^{xxxii xxxiii}

This stagnation in minority representation occurred despite a steady increase in the number of first year positions. Between 1974 and 1983, enrollment of all students

increased by 24.6%, but African Americans comprised only 3.9% of this increase. All under-represented minorities comprised 9.25% of the expanded enrollment, while non-minority students gained 90.75% of the new positions. ^{xxxiv}

Examined individually, each under-represented minority group shows a similar trend. The only minority group to show significant improvement in representation is Asian/Pacific Island students, who have increased from 5.1% of the 1982 entering class to 15.9% of the 1991 entering class.

Table 2: Number and percentage of first year medical students by race, selected years from 1968 to 1994. ^{xxxv}

Year	A-A	N-A/ A-N	M-A	PR	URM #	URM %	Asian- Amer.	White	Total*
68-69	266	3	20	3	292	3.0%	121	9,450	9,863
74-75	1,106	71	227	69	1,473	10.0%	275	12,814	14,763
88-89	1,210	76	295	128	1,708	10.1%	2,100	12,386	16,868
93-94	1,489	129	437	106	2,161	12.6%	2,761	11,463	17,090

A-A African American, N-A Native American, A-N Alaskan-Native M-A Mexican American, PR mainland Puerto Rican, URM Under-represented Minority

*Total includes other minorities that are not considered under-represented.

Total Minority Enrollment

Total enrollment of minority students essentially reflects the patterns of first year enrollment. After 1975, the percentage of all minorities enrolled plateaued at 8 - 9% and then increased in 1992 to a total of 9.4%.^{xxxvi xxxvii xxxviii} For example, the number of under-represented minorities in medical school was 4,898 in 1978 and ten years later had only grown to 5,798 (38A).^{xxxix} At the same time, total student enrollment increased, thereby holding fixed the same proportion of minorities in medical school.^{xl} Between 1975 and 1990, minorities in the U.S. increased by 18.5%, further widening the gap between minority representation in medical school and the general population.^{xli}

Minority Attrition and Retention

Once in medical school, minorities are more likely to require an extra year to finish medical studies and to fail the national board exams on the first sitting.^{xlii} Rates for repeating first year courses are three to five times higher for minorities than non-minorities.^{xliii xliiv}

Minorities also experience higher attrition rates. In 1973, the retention rate for minority students was 88%, compared to 97% for all students, with little difference among minority groups. In 1978, 5.5% of graduates were African American students. By 1982, the number decreased to 4.8% among 15,985 medical school graduates. ^{xlv xlvi}

Minority Residents and Faculty

In 1986, only 8% of residents were from under-represented groups; 30% of these were foreign medical graduates. Among U.S. and Canadian graduates, African Americans were 4.9%, Puerto-Ricans 1.5%, Mexican Americans 0.9%, and Native American/Alaskan Natives were 0.1%.^{xlvii}

Minorities receive the residency of their choice when compared to non-minority residents, but their attrition rate is higher.^{xlviii} For example, from 1982 to 1987, the actual number of internal medicine residents who were African American decreased, even though the total number of residents increased.^{xlix}

When compared with majority colleagues, minority residents are twice as likely to practice in federally designated shortage areas, three times as likely to see minority patients and accept a greater percentage of Medicaid patients.^{1 li} Table 3 shows the specific racial composition of the patient population of African American and Latino residents.

Table 3. Patient profile of minority resident practices.^{lii}

Patient Population	African American MDs	Latino MDs
Majority	33.3%	42.4%
African American	50.6%	7.7%
Latino	14.5%	46.8%

The minority physician population has only increased from 3% in 1970 to 7% in 1991. Minorities in the general population during the same time period, however, have increased from 12% to 22%.^{liii} The Council on Graduate Medical Education predicts that minorities will comprise 25% of the U.S. population by the year 2000.^{liv}

By race, the trend is the same. In 1950, African Americans comprised 10% of the population and only 2.2% of all physicians. In the same year, only 100 African Americans were subspecialists.^{lv} By 1980, African Americans represented 11.7% of the population and only 3.1% of physicians.^{lvi} For other minority groups, the pattern is similar.

Although the proportion of minority physicians lags behind the general population, faculty representation lags even further behind. In 1975-76, the proportion of minority faculty was 1.8% African American, 0.2% Mexican- American, 0.7% Puerto Ricans (including 0.5% at the University of Puerto Rico) and 0.0% Native American.^{lvii} In 1982, minorities comprised only 2.6% of full-time faculty; less than half were at the 120 non-minority medical schools.^{lviii} By 1991, minorities comprised 22% of the general population and only 3% of the medical faculty.^{lix lx}

Minority Students in High School and College

Preparation for rigorous medical school courses begins in high school and even earlier. For many minorities, however, a high school degree seems to be an unattainable goal. In 1971, only half of African American and mainland Puerto Rican high school juniors were graduating.^{lxi} Latinos as a whole have substantial high school attrition rates. In 1991, only 51% of Latinos 25 years and older had completed four years of high school compared with 80.5% of non-Latinos.^{lxii}

By the time Americans begin high school, most have deficiencies in their science skills, especially minorities. The National Assessment of Educational Progress (NAEP) found that there has been no increase in the percentage of minority high school seniors who mastered skills required for college success.^{lxiii} In 1988, the average Scholastic Aptitude Test (SAT) scores of African Americans was 200 points lower than that of whites and Asians; Latinos, on average, scored 130 points lower.^{lxiv} A 1986 study reported that only 0.05% of 17 year old African Americans were prepared to study science in college. This number, equivalent to 2,800 individuals, is only slightly higher than the number of African American applicants to medical school.^{lxv}

Only a quarter of African American high school graduates entered college in 1970. The entrance rate was even lower for Mexican Americans.^{lxvi} Once in college, minorities demonstrate a high degree of interest in medicine: 5.5% of African American freshmen select medicine as their first career choice compared with 3.2% of white freshmen.^{lxvii} ^{lxviii} However, in 1975, a lower proportion of minority college students applied to medical school compared to non-minority students.^{lxix} Problems cited that prevent minority college students from pursuing pre-medical tracks include difficulty with introductory science courses and moderate college attrition.^{lxx lxxi}

Summary of Trends

In the early 1950s and 1960s very few minority physicians and medical students existed in the U.S. The number of applicants and matriculants, including minorities, began increasing by 1969 due to national and local efforts. After the AAMC 1970 report, the number of minorities entering medical school increased substantially, but the goal of 12% was not reached. After 1975, the number and proportion of minorities entering medical school actually decreased. The original goal of the AAMC report-- to mirror the percentage of minorities in the general population-- has remained elusive.

Also in the 1980s, the Graduate Medical Education National Advisory Committee predicted a surplus of 55,000 physicians by 1990, and others predicted a 30% surplus by the year 2000. Experts pointed out that the surplus did not include minority health professionals. Many remaining shortage areas have large African American and Latino populations, and health status measures for African American and Latinos are worse than for whites.^{lxxii lxxiii}

In response, the AAMC chartered *Project 3000 by 2000* in 1991 with the goal of enrolling 3000 minority medical students by the year 2000. In the following two years,

minorities entering medical school increased by 18%. However, only 2,010 minorities entered in 1995.^{lxxiv} As African Americans, Latinos, and Native Americans will be 25% of the population by the year 2000, more work remains.^{lxxv lxxvi lxxvii}

Financial Issues

Financial issues remain at the center of many discussions surrounding minority medical education. Students, medical schools, government agencies, and other programs designed to address the issues of minority under-representation in medicine all grapple with the lack of appropriate funds and how best to direct the funds that are available.

Historically, minority physicians are more inclined than non-minorities to serve the poor and minority populations. This pattern remains true even though opportunities for minority physicians are increasing. Despite intense recruitment, the pool of minority students remains small. One piece of the problem is that minority families are less able to finance undergraduate and medical education.^{lxxviii}

For students, the issues are personal and immediate. The cost of both undergraduate school and medical school either are prohibitive or present a large disincentive for minority students considering a medicine. These reasons, in combination with other cultural factors, serve to decrease an already small pool of applicants.

For example, Latinos have high attrition rates at all educational levels, attend urban schools and lack role models. Often, they do not have parents who can serve as educational advocates or afford to pay for college. There is a need to improve federal, state and national programs to support community initiatives and increase funding for Latinos pursuing health careers.^{lxxix}

Medical schools, with ever decreasing aid from local, state and national agencies, struggle to balance their commitment to teaching with research commitments and increasing competition with private for-profit hospitals and medical corporations. In this milieu, it is difficult to find extra funds and staff time necessary to implement successful minority recruitment and retention programs.^{lxxx}

Over 20 percent of all minority physicians are trained in traditionally black medical colleges. Financial support of these facilities is crucial. The mission of these institutions is to educate minority physicians, but because these schools lack endowments, large research budgets and well-insured patient populations, they are in a precarious financial situation. The government must recognize the education of minority physicians as one equal in importance to basic science research and fund it accordingly.^{lxxxi}

Recognizing these problems, some government agencies have tried to respond. The Secretary of the Department of Health and Human Services (DHHS) requested 43 million dollars in 1990 for minority health professions education. In 1991, DHHS spent \$90 million in this area. In 1992, \$133 million was requested. Funds have been directed towards the following: support for the traditionally black medical colleges; initiatives to

encourage students from kindergarten through high school to pursue science careers; supporting minority students in predominantly white institutions; helping to support students pursuing doctoral degrees; and allowing minority faculty to devote more time to research.^{lxxxii}

The government branches of health research have their own problems to overcome. The National Institutes of Health (NIH) has a poor record of hiring and promoting minorities. NIH has implemented minority programs to offer tuition subsidies and loan forgiveness. Longer range plans include linking black colleges with research universities, helping 2-year students complete education at 4-year colleges and supporting science interests of high school and middle school students.^{lxxxiii}

In spite of the dollars invested thus far, minority applications and enrollment in medical school remain low. In 1992, Robert G. Petersdorf, MD, President of the Association of American Medical Colleges, suggested, "Instead of congratulating ourselves for 'Lone Ranger' programs, we need to assess the needs of minority students at each stage of the educational continuum, and design our strategies accordingly."^{lxxxiv}

In review, it appears that programs focusing on early intervention which generate interest in science, as well as provide challenging math and science curricula, are the most effective. The Gateway to Higher Education program at City University of New York (CUNY) Medical College targets achieving 7th, 8th and 9th graders. At a cost of \$1,200 per student, the program provides tutoring, high level math and science courses, communication skills, mentoring, and summer academic/research programs. Of the first 119 graduates that enrolled in college, 114 had state and national exam scores which were higher than predicted. Only three students out of 600 dropped out of high school and their attendance was improved.^{lxxxv}

Clearly, the perplexing problem of disproportionate representation of minorities in medicine will not be solved by financial means alone. A national commitment to improving education across the board will be an important step towards correcting inequities in all professions. However, short of an overhaul of our public school system, judicious use of funds can lead to significant improvement in the diversity of medical schools.

Psychosocial Issues for Minority Medical Students

The literature search turned up few articles which researched minority students' perceptions of medical school. One journal article, published in the Journal of the American Medical Association (JAMA) in 1995,^{lxxxvi} was written by university counselors to describe key issues that medical students face. A section on "ethnic minority student challenges" concluded that minorities encounter a "second acculturation" when attempting to fit into the medical school culture. From their discussion with students, the authors extrapolated four factors which seem to be implicit rules in medical school. These include the belief that: 1) medicine should be the highest priority in one's life; 2) emotional detachment equals objectivity and facilitates the provision of quality medical care, while emotional involvement inhibits clinical judgment; 3) competition produces excellence, while cooperation indulges intellectual mediocrity; and 4) tradition establishes the standards of excellence. These contrast with the value system of ethnic minority students, which causes psychological distress. Ethnic minority students believe that: 1) one's highest allegiance should be granted to loved ones, not to a profession; 2) emotional connections are a necessary precursor to patient-physician trust and professionalism; and 3) cooperation facilitates a sense of belonging and confidence that enhances, not impedes, the learning process.

The minority students discussed the feeling of having "multiple identities" within their communities. Some students were told by their communities that they were proud of their accomplishments, while others were told that they were "sell-outs." Other interactions with the majority students made medical school a stressful experience. Because of their small numbers within the medical school, minority students felt as though their words and actions were interpreted by majority students as representing the opinions of all people of their respective racial group. Minority students also felt distressed when majority students described them as different from other minorities that the majority students had encountered. These statements made the minority students feel as though the rest of their racial group was perceived negatively.

Model Programs: "Solutions to the Problem"

In the review of literature, many different approaches to address the under-representation of minorities in medical schools was found. These approaches target students at various educational levels, including medical school, pre-matriculation, post-baccalaureate, undergraduate, and secondary education. At each level, there are certain programs or strategies that are more effective than others at increasing the number of minority medical students. It is crucial to highlight these programs and discuss some of the reasons why they are successful.

Medical Schools

By the time an under-represented minority student gains entrance into medical school, they have passed the scrutiny of an admissions committee and have proven that they possess the desire, determination, and aptitude necessary for a career in medicine. The

students that fail to graduate most often encounter their problems during the first two years of medical school. This fact has been realized by medical schools whose retention efforts focus on these two critical years. While the reasons that students do not do well are vast, one overriding theme cited in the literature involved the failure to adjust quickly enough to the pace of medical school. Reasons included the failure to develop effective methods of study, the absence of a strong background in the basic sciences, and deficiencies in reading comprehension.^{lxxxvii}

Retention strategies at this level require a certain amount of individualization. The needs of all students cannot be met with one standardized policy. Success at this level will involve taking time to counsel students individually so that the most appropriate plan can be developed. Ideally, the strategy should be structured so that intervention occurs as early as possible. Most often, this is during the first semester, before failure is inevitable.

Two such programs have been successfully established at Indiana University and the University of Tennessee.^{lxxxviii lxxxix} Similar to these institutions, new counseling programs should involve a discussion about external stressors, effective study skills, time management, tutoring, and a decelerated curriculum, i.e., a split first year. Affirming confidence in the students' ability is most important during this period when many students begin to doubt themselves. This is also an opportune time for the school to develop an understanding with the student about the progression and promotions policy of the school. The initial contact should launch an ongoing dialogue that will allow feedback and facilitate modifications to the original plan. If at any time the administrator feels dismissal is inevitable, the decelerated curriculum should be considered as a proven and effective option. The decelerated curriculum will give the student more time to improve study skills, receive tutoring or resolve external stressors. This system is very effective at increasing retention rates and should be used for minority and non-minority students with special academic needs.

Pre-matriculation

Pre-matriculation programs can serve two purposes. For the minority students who are already accepted, it provides an opportunity for them to become familiar with faculty and adjust to the pace of medical school. Boston University and the University of Tennessee students who participate generally feel that the program adds to their confidence and improves their study habits.^{xc} The pre-matriculation program can also allow medical schools to look more closely at students who may have otherwise not been considered. This latter strategy improves the medical school's potential for increasing its number of minority students. It is designed to look at each student's performance in core subjects, such as anatomy and biochemistry, taught at a fast pace and level that is comparable to medical school. Pre-matriculation programs usually provide stipend and housing for students who participate.^{xcii}

Post-baccalaureate

The post-baccalaureate program has been a successful tool used by medical schools to increase minority representation. Programs such as those at Boston University and Michigan State University target students who have graduated from college and have been unsuccessful in gaining admission into medical school. The structure of the post-baccalaureate program may vary, but it usually lasts one year. The program begins with an intense summer session involving MCAT preparation and classes on study skills and time management. The remainder of the year is dedicated to the core basic science classes. Students are informed about the performance needed to gain acceptance into medical school at the beginning of the program.^{xciii}

The post-baccalaureate program is successful because it gives students the time to improve their study skills and to enhance their basic science background, before carrying the full course load of medical school. In many programs, minority students are in the majority which provides an atmosphere that is less stressful and more conducive to learning. By establishing criteria for admission, the program assures students that their hard work will be rewarded. Also, when students are brought to the medical school campus, advanced students serve as valuable role models and a source of inspiration for younger students. These advanced students, often without prompting, will also provide valuable advice and encouragement.^{xciv xcvi}

Undergraduate

While a greater percentage of minority students, as compared to their white counterparts, express interest in medical school when they enter college, many minority students drop out of the "medical school pipeline."^{xcvi} Possible reasons include dwindling financial aid, less-than hospitable climate for minorities on many college campuses, poorly taught introductory science courses, and poor academic preparation prior to college. Most successful undergraduate programs attempt to address at least some of these issues.^{xcvii}
^{xcviii} The Health Careers Opportunities Program (HCOP) sponsored by the U.S. Department of Health and Human Services is one such program. The more successful HCOP, such as the Summer Program at Baylor University, takes students that have completed one year of college and strengthens their basic science foundation with classes in General Chemistry, Organic Chemistry, Trigonometry, College Algebra and General Biology. Other classes offered may include reading comprehension, writing skills and critical thinking.^{xcix} These summer sessions generally serve as a good review and supplement to classes taken during the school year. This program also provides an environment that is comfortable and encouraging and gives students the chance to observe physicians in practice so they can decide if a career in medicine is really for them.^{c ci cii}

A newer strategy involves alliances between 2-year and 4-year colleges. In this type of program, students with poor high school preparation who desire to pursue a career in medicine can take classes at the junior college level that will prepare them for a more strenuous 4-year college curriculum. This approach is very reasonable because it relies

on existing course, resources and staff at the schools. It requires a tracking system to identify potential students and curriculum development to outline classes necessary to transform high school students into competitive medical college applicants.^{ciii civ}

Grades 1-12

For more than 10 years, there have been sincere efforts by many medical schools to increase the number of under-represented minorities. The University of Arizona, along with numerous other medical schools, recognizes the importance of starting early by reaching out to high school students before the obstacles to applying to medical school become insurmountable.^{cv} If the U.S. is serious about improving the quality of health for underserved communities by increasing the percentage of minority physicians, then focus must be placed on the root of the problem.

Conclusion

The fact remains that the majority of the researchers who have attempted to identify causes for the under-representation of minorities in medical schools have concluded that the major problems occur at the elementary and high school levels. Public school systems, especially in inner cities and some rural areas, do a very poor job of preparing students for careers in science and mathematics. Since so few African American teenagers are prepared to study science in college, recruitment and retention programs are clearly not the whole solution. The number of African Americans and all under-represented minorities graduating from high school and prepared for college must be increased if any significant increases are to be seen in the percentage of minority physicians.^{cvi cvii} The solutions to increasing and enhancing the experience of minorities in medicine requires a new value to be placed on the education of children. If school systems are improved and the parents are educated and involved in the education process of their children, the problem of under-representation of minorities in medicine may begin to be resolved as well as in other fields of study.^{cviii cix}

Summary of Focus Groups

Recruitment of Subjects

A total of seven focus groups were held; five were held at national meetings and two were held over conference calls. In order to interview students from as many medical schools as possible, the focus groups were held at the following national meetings: the American Medical Student Association National Convention, the Asian Pacific American Medical Student Association Midwest Conference, the Chicano/Latino Medical Student Association Annual Conference, the National Network of Latin American Medical Students Annual Conference, and the Student National Medical Association Annual Convention. Announcements for students to attend the focus groups were placed in the conference programs and verbal invitations were made at plenary sessions. Occasionally the facilitators encouraged a passerby to participate. The groups ranged in size from seven to fourteen participants.

The two conference calls consisted of one group with three clinical minority student participants, and a second group with four non-minority student participants. Participants for the conference calls were recruited by members of the study group who made an effort to choose participants who would represent a general perspective.

Study Population

The focus groups and conference calls consisted of a total of 57 medical students: 20 were African American, 11 were Asian, 22 were Latino, and 4 were Caucasian. Twenty-first year students, 10-second year, 16-third year and eight-fourth year students participated. There were 26 female and 31 male participants. In total, they represented 35 medical schools, evenly distributed across the nation.

Methodology

All seven focus groups were convened outside the scope of this purchase order during March and April of 1996 and were independently supported by AMSA and the collaborating organizations. The results of the focus groups were relevant and complementary to the literature search findings and are, therefore, included as a supplement to this report. Each discussion lasted approximately one to one and half hours. One member of the study group served as facilitator and another as observer/note-taker. With their permission, students were recorded, and the tapes later transcribed and analyzed. The focus groups were introduced to the students as a way to further understand specific issues relating to minority medical students and fill the gap left by the literature search. It was stressed that information shared in the groups was strictly confidential and would be shared only with AMSA and ancillary staff. Everyone was encouraged to share their experience. Participants in each group were asked to comment on certain issues in order to facilitate analysis of responses. However, facilitators were at liberty to clarify issues with additional questions.

Focus Group Findings

Despite the fact that facilitators emphasized the confidentiality of the focus group discussions, many students were reluctant to participate and risk being identified. These students feared repercussions from their school administrations. Students attending Historically Black Colleges and Universities (HBCUs), on the other hand, felt that anything they said in the focus group could also be said face to face to any administrator and faculty member. Several focus groups spent a significant amount of time discussing the issue of anonymity before students felt comfortable proceeding.

Issue #1: Difference of experiences of non-minority and minority medical students.

Three key concerns resonated throughout the focus groups regarding this issue. The first was that an overwhelming number of students felt pressure to perform well. They felt that they had to be "perfect" or "better than other students" in order to prove that they "belonged." Many students specifically mentioned feeling such, and this was the general consensus in most groups, with the exception of the Asian American group. The Asian American students felt that their experience did not differ from that of non-minority students. The students who experienced few or no problems tended to be from schools with a larger Asian American student population. The pressure to perform arose from the second issue that consistently came up in the focus groups: students felt that others saw them as having only been accepted to medical school "because they were minority." For example, during small group sessions and laboratory exercises, minority students who knew information that non-minority students did not were often asked to justify themselves by citing the source of the information. In contrast, information that non-minority students provided was usually accepted at face value. This was both angering and frustrating to students and contributed to their anxiety over performing well in school. Finally, students stated that they had similar problems/issues that non-minority students dealt with; however, these problems were compounded by other issues, such as family issues, financial problems, and learning how to "cope" since many students were the first in their family to attend college. Several students who were one of only two-to-three minorities at their schools expressed that they felt isolated, lacked role-models, had "lost their identity" and felt great pressure to "assimilate" in order to fit in. Other students expressed feeling unacknowledged and that they had internalized being less qualified.

Of note is that 14% of students felt that their experience was different, but not necessarily negative. When asked to identify what made their particular experience different, students attributed it to feeling "recognized as not only qualified, but having professional attributes that others didn't." Examples included being able to see a variety of patients and establish rapport, whereas others lacked the cultural identity. Other factors that contributed to their feeling more positive about their experience were having a supportive administration or Dean, an effective Office of Minority Affairs or Hispanic Center of Excellence and colleagues who consider them as equals. African American students at HBCUs felt faculty and administrators treated them "like family members" who followed their activities closely and cared deeply. Unlike many students at predominantly non-minority schools, students at HBCUs did not feel the pressure to acculturate, but instead felt that they could be themselves and voice their thoughts without fear of repercussions.

In general, students from the non-minority focus group felt that the academic experiences for minority and non-minority students were the same, but that their experiences differed socially. They primarily attributed this difference to their observation that the minority students clustered together, perhaps because they already knew each other from pre-matriculation programs. They felt that this self-grouping was awkward and disruptive to class dynamics.

The non-minority students also felt that programs specifically for minorities provided those students with an unfair advantage. They perceived an administrative effort to keep the content of and reasons for minority programs quiet. The existence of such programs and the seemingly secretive air around them made one non-minority student feel "like I'm being discriminated against, like I don't have the same chance."

When discussing factors that may aggravate their situation, some minority students specifically described these same minority programs as a "double-edged sword." They saw the programs as being beneficial, yet also creating tension between the minority students and their non-minority classmates. The minority students felt that some non-minority students perceived the programs as remedial, which simply added to the general assumption that minority students were not qualified. Non-minority students were perceived as using the existence of such programs as justification for keeping study material from minority students or segregating them out.

Although the facilitators did not probe gender issues, a substantial number of women raised the concern that they were at a "double disadvantage." They found it especially uncomfortable to be the only woman in a predominantly male group. The women felt that at least the male minority students would have some degree of acceptance as a physician because they would still fit in as men. One African American man disagreed with this and recalled an occasion in the operating room when he was treated as an orderly, not a medical student.

Several students identified their religious background as another factor that made their experience different. These students felt that many minorities come from families with strong faith systems and church involvement, but medical school does not include a place for faith.

Issue #2: Perception of minority students by classmates and/or faculty and its affect on the minority students.

The discussion of this issue echoed much of what had been stated on the previous issue. Some of the students stated that they were expected to be less qualified and to know less because non-minority students and faculty assumed that they had gained acceptance into medical school only because they were minority. They continually found themselves having to justify their answers. One student felt her stress was "magnified because if one out of four has difficulty, it's different from five out of one-hundred and ten of the majority." Once again, minority students felt extra pressure to perform in order to avoid validating such stereotypes. Some students felt that the chance to overcome these stereotypes motivated them to work harder. Many students disagreed. They felt that whether or not they wanted to admit it, everyone desires to belong. The anxiety about others' perceptions consistently distracted them and drained energy that should have been devoted to academics.

The Asian students felt that they were not perceived as being different and they were treated like any other student. One exception was a female student who felt a professor had assumed she was especially hard working and smart because of the perception that Asian students are such. On the other hand, an Asian American woman in her clinical years reported that attending physicians have evaluated her as quiet and less personable with patients and peers (even though other Asian American students do not consider her quiet and shy), presumably due to the assumption that all Asians are this way.

Many African American students felt strongly about this issue. One student said it was a "race issue--we'll always be treated as less than..." In his opinion, the African American saying "the white man's ice is colder" illustrated this well. In other words, the Caucasian physician will always be perceived by all patients, even minority patients, as being better. Many students agreed with this sentiment.

Specific to Latino students was the fact that they were perceived as interpreters. They were "no longer [treated as] a colleague or a physician-in-training" with a special skill. Instead, students and faculty attempted to use them merely as technical aids.

In general, minority students agreed that many faculty and peers did not hold these stereotypes. The influence of those who did, however, was sufficient to negatively affect their experience as minority medical students.

Issue #3: Types of support available to minority students; difference in resources available to minority students (i.e., a minority office or dean) and non-minority students.

Support for students varied from having no minority student resources to having an extremely sympathetic dean of the School of Medicine. Of the students whose schools had an Office of Minority Affairs (OMA) available to them, the office's effectiveness varied. Some students felt that the office was very helpful, some felt that the office was powerless, whereas others felt the OMA's effectiveness varied depending on the individual student. A student who attended a school where there was no OMA said students were automatically forced to extend their curriculum if they had academic trouble. Other students said they relied on support from the administration and/or faculty. African American students at some schools relied on upperclassmen or strong local chapters of the National Medical Association for support. Both groups provided a genuine commitment and a willingness to tell the newer students the truth about what to expect. In general, students found it helpful to have one individual they knew they could count on and trust to support them. One student felt she had "no one to go to," and a student from the midwest thought that he was treated unfairly because the African American students received resources first and the "Hispanics get what trickles down." Asian American students knew of the Office of Minority Affairs but were less aware of their function. They did not feel the office was intended to address their particular needs, but rather that the office was there to serve Latino and African American students first. In short, experiences varied greatly. As previously stated, some students felt that with the support of someone, be it a faculty member, fellow students, a dean, a community

member or someone in an administrative position, their experience in medical school was positive.

Issue #4: Response by institution when minority students have problems; difference in response for minority and non-minority students.

Most students felt the process was not fair because it was too subjective and, therefore, needed to be standardized. They felt that basically “if you were liked by [the administrators], they would help you.” They also felt non-minority students received lighter punitive measures for lower grades and board scores. Perceptions of minorities’ academic abilities were also different. For example, midway through his first year, one African American male performed poorly on an exam. Faculty and administrators suggested that he might have a learning disability. Yet he had passed all of the previous exams and had also earned a masters degree before entering medical school. This student felt that non-minority students who performed poorly on a single exam did not have their capabilities questioned. Minority students also found it difficult to identify advocates because there were a limited number of minority faculty, if any, to whom they could turn. They stated that some advisors were hesitant to help minority students for fear of repercussion by the dean or other faculty.

Supportive responses by schools toward minorities were limited. One student said her school would do everything in their power to help minority students graduate; however, she was in the minority. Another student stated that the ombudsperson at her school was extremely helpful because this person was objective. They did have to be very careful with confidentiality, though. Finally, one student attended a school where they had a “recruitment and retention committee” that met monthly to discuss issues and suggest solutions, but not to discuss individuals. He felt that this method was a more productive means of implementing changes.

Issue #5: Experiences that have made being a minority in medical school a positive experience.

The overwhelming discussion regarding this issue was that minority students felt encouraged that they were there for their patients who were like them, to whom they could personally relate. One student shared an experience of a patient telling him, "I'm so proud of you," as if the patient were his grandmother; it made him feel very happy to hear that. Similarly, Latino students feel a great deal of satisfaction when patients tell them "Gracias, doctora/o." (Thank you, doctor.) Students felt it was important to be available as role models to younger students. Finally, they recognized their role as educators of their peers and faculty in providing a cultural perspective that would otherwise be lacking. One student stood out because he said he was helping to educate people who had never interacted with an African American person before. Finally, they enjoyed the cultural exchange with colleagues. Unfortunately, one student stated that there was nothing positive in being a minority at her particular school.

Issue #6: Suggestions on improving medical education for minority medical students.

Most students felt that any effort to attempt to improve things would be helpful. They generally agreed that increasing the number of minority faculty, staff and medical students would be extremely helpful. The faculty was especially important because they could assist with retention. Some students felt that they simply wanted to be treated like any other student with respect. Some recommended discussing issues of race and cultural sensitivity early on, i.e. during orientation. In regards to peer interaction, minority students thought it would be appropriate if the non-minority students could make the minority students feel welcomed and appreciate their differences rather than leaving the responsibility of assimilating to the minority students. And finally, one student reminded his group to recognize their own racism.

Issue #7: Other topics of concern to students.

In general, students were grateful to participate in this type of discussion where they could have open and honest discussion about these issues. They were hopeful that some positive and reasonable recommendation might come from this that would help alleviate some of these problems.

Conclusion

Medical school is a stressful experience for all students. As evidenced by the focus group discussions, the stress for minority students is substantially compounded. Sources of stress unique to minority students include the absence of role models, alienation, greater financial strains and the pressure to assimilate into a culture that does not extend itself to them. Perhaps the greatest source of stress discussed here is the pressure to overcome the perception that minority students are not qualified to be in medical school. This pressure, coupled with the lack of social support, profoundly affects minority students emotionally and academically. In such an environment, minority students do not have the chance to work at their greatest potential.

Conclusion and Recommendations

For over 25 years, government agencies, medical associations and individual institutions have been working together to improve minority representation in medicine. Despite significant increases from 1970 to 1975, the past 20 years have not produced as many positive results as one would have expected. Increases in the number of under-represented minorities enrolled in medical school have paralleled increases in the total number of students. For the most part, these changes in minority enrollment reflect general trends in admissions, not effective solutions to increasing minority representation.

The same groups from 1970 have recently renewed efforts aimed at minority medical representation. As programs such as the AAMC's *Project 3000 by 2000* continue, an increasing number of minorities will again be enrolled in medical school. Unless all of

the factors are examined which influence minorities in medicine, the risk of repeating the pattern of the past two decades exists.

The literature review revealed several influential factors which affect minority admissions to medical school. Despite the need to increase the pool of minority applicants and enrollees, financial barriers prevent many minority students from attending college and medical school. Although potential minority medical school applicants need to be identified and nurtured early in their education, the elementary and high school educational system in which minorities learn does not prepare them for college level science classes. Minority students are not exposed to medical career opportunities and, therefore, do not consider medicine a potential path. For those minority high school students who are interested in medicine, the combination of difficult college science classes, financing undergraduate and future graduate tuition, and the lack of minority role models and encouragement quickly pushes them out of the medical pipeline.

For minorities who remain in the medical pipeline, the literature focuses on acceptance rates and enrollment, retention strategies and academic indices. Yet, not a single student in six minority focus group sessions mentioned academics as an obstacle. The discussions during the focus groups demonstrate that social factors profoundly affect the performance of minority students.

For example, the students from majority schools feared being identified with their comments, whereas students from HBCUs felt comfortable voicing their opinions, regardless of the confidentiality. This difference seems to embody many of the issues raised within these focus groups. Minority students attending majority medical schools perceive that they are not respected by peers, faculty and administrators. The lack of respect creates a situation in which minority students are consistently justifying their place within medicine.

Their fear sends a powerful message to academic and health policy leaders. What progress does increased minority enrollment make if minority students are sent into environments where they perceive that they are not respected and not able to fulfill their potential?

As seen in the literature review, minority medical students are not at the beginning of medicine, but rather are experienced travelers down the medical pipeline. Minority students have creative ideas and solutions to the problems they encounter in medicine. In order to shape a more positive future for minorities in medicine, the experiences of minority students must continue to be solicited and studied.

Recommendations

Lobbying by professional associations and the Bureau of Health Professions of the Liaison Committee on Medical Education to develop and institute standards for

accreditation of medical schools on student advocacy with special attention paid to minority student recruitment and retention.

BHPr support for a program for minority faculty development in collaboration with NAMME.

Support by BHPr to AMSA through GPIT II, as feasible, for training workshops for minority students, faculty members and administrative leaders to provide a forum to jointly develop solutions to improve the school environment for minorities. Attending schools will be represented by an equal number of students, faculty and administration.

In order to create a safe place where minority students feel comfortable voicing their ideas, one of the sessions will include students from several schools so that they can discuss the problems that currently exist for minority students and present their findings in aggregate to the faculty/administrator group without fear of reprisal.

A second session will group students with faculty/administrators from different schools. These groups will develop solutions to the problems previously identified. Again, this format will provide a safer environment in which students can speak comfortably, while allowing the diversity of schools represented to foster more creative problem-solving.

During a final session, students and faculty/administrators from the same school will come together to mold the solutions to fit the unique challenges at their own school.

BHPr support for research on the psychosocial experiences of minority medical students. There is a paucity of data for all minorities, but especially for Asian Americans, Native Americans and Latinos. There is also a void in the literature regarding minority student experience during the clinical years. AAMC should be encouraged to share existing experiential and statistical data regarding minority students collected on the first and fourth year medical student questionnaires they administer.

Expand the current federal and state financial aid for minority students at all educational levels; schools should include debt management counseling in order to make the goal of becoming a physician attainable.

Department of Education, National Science Foundation and other relevant organizations/associations support for science enrichment programs at early educational levels (e.g. elementary school) to increase the number of qualified minority medical school applicants. Develop mentoring programs to link medical students with junior high, high school, and college students, similar to the AAMC program funded by the Robert Wood Johnson Foundation called the Health Professions Partnership Initiative which supports linkages of health professions schools with at least one K-12 school system and an undergraduate college. Also AMSA has launched the Coaching Adolescents Toward Careers in Health (CATCH)

whereby medical students provide science enrichment and role modeling activities with junior and senior high school students.

Improvement in admissions policies and medical school environment for minorities through the contribution to curricular reform and policy decisions by minorities. It is essential that AAMC and other professional associations provide encouragement to medical schools to uphold current affirmative action policies in order to increase the representation of minority students, faculty and administrators on campus. AMSA, in collaboration with a coalition of other student groups, has launched a campaign to educate its constituency about the importance of affirmative action in medical education.

Federal initiative to identify and coordinate minority medical education efforts to share successful strategies for recruitment and retention of minorities in medical school. Convene a national conference to promote collaboration and commitment by health professions schools to improve recruitment, retention and well-being for minorities in medical education. In 1994, AMSA recognized Harvard Medical School with the Paul R. Wright Excellence in Medical Education Award, representing the students' choice of the American medical school that best demonstrates exceptional achievement in the recruitment and retention of underrepresented minorities; AMSA published and disseminated a book describing Harvard and other successful schools' approaches.

Development by AMSA under GPIT II contract from Bureau of Health Professions of an assessment tool to measure both the effectiveness of minority programs and the comfort level of minorities at each school. See Appendix C for a list of sample questions to be considered for inclusion in a self-assessment tool. Additional support from private funding agencies is needed to distribute the tool and collect the responses. Support from the Bureau is needed to analyze and disseminate findings of this and other studies.

An active role by states in developing recruitment, retention and well-being programs to benefit all medical students with particular attention paid to underrepresented minority students.

Federal or state support for association programs which identify and recognize outstanding practicing minority clinicians; development of a database for use in making these individuals accessible to physicians-in-training through speaking engagements, preceptorships/internships, career guidance and role modeling or mentoring.

APPENDICES

A. Study Group on Minority Medical Education

B. Annotated Bibliography on Minority Medical Education

C. Student Questions

STUDY GROUP ON MINORITY MEDICAL EDUCATION

Lydia J. Vaias, M.D.
1995-96 American Medical Student Association (AMSA) National President

Selina Chen
Asian-Pacific Medical Student Association
Medical Student,
University of Missouri - Kansas City

Laura Gaines
AMSA
Medical Student,
Eastern Virginia Medical School

Dianna Grant, M.D.
Senior Committee Member
Vice President, Medical Management
Trinity Hospital - Advocate Health Care

Ojinga Harrison
Student National Medical Association
Medical Student,
University of Tennessee

James “Jim” Kennedy
Association of Native American Medical Students
Medical Student,
University of Oklahoma

Gina Moreno-John, M.D., M.P.H.
Senior Committee Member
Massachusetts General Hospital

Blanca Solis
AMSA; National Network of Latino American Medical Students
Medical Student,
University of California - Davis

ANNOTATED BIBLIOGRAPHY ON MINORITY MEDICAL EDUCATION

Acker AL, Freeman JD, Williams DM (Louisiana State University Medical Center in Shreveport). A medical school fellowship program for minority high school students. *Journal of Medical Education*. 63(3): 171-5, 1988 Mar.

This study analyzes the career choices of students participating in the first five years of an NIH-funded Minority High School Research Apprentice Program through Louisiana State University Medical Center. Compared to the local high school population, there were proportionally fewer black males participating. Therefore, the forces that deter black males from medicine act earlier than high school. The authors conclude that high school intervention and science interest programs can still modify a portion of the negative influences, but to adequately improve minority involvement in medicine, programs should start at earlier levels.

Anonymous. Minorities in science '93. Trying to change the face of Science. 262(5136): 1089-131, 1993 Nov 12.

This article summarizes the collective efforts of US institutions to increase the number of minorities in science careers. The types of programs include increases in minority faculty, foreign influences, culturally appropriate science and ways in which white scientists can effectively mentor minority students.

Anonymous. Minority and nonminority medical students' perceptions of the medical school environment. *Journal of Medical Education*. 53(2): 135-6, 1978 Feb.

The authors surveyed medical students at one school. Minority students feel supported by the administration but not the faculty, whereas non-minority students feel supported by the faculty. All students felt supported by tutors and special program coordinators. The authors recommend administrative facilitation of the relationships between minority students and faculty.

Anonymous. Medical education for minority group students. *JAMA*. 210(8): 1586, 1969 Nov 24.

This article updates the progress being made to increase minority representation in medical school. The information is from a joint report by the NMA and the AMA. Medical schools are taking two basic approaches. One is a short-term approach which includes providing grants, recommending that students spend a preparatory post-baccalaureate year and offering five year medical programs. The second is a long-term approach which includes visiting junior colleges and high schools for career counseling and taking students on tours of medical schools. The author also concludes

that in order for any of the projects to be successful, immediate increases in funding are necessary.

Babbott D, Weaver SO, Baldwin DC Jr (Department of Biostatistics, University of Vermont College of Medicine, Burlington, VT). Primary care by desire or default? Specialty choices of minority graduates of US medical schools in 1983. *Journal of the National Medical Association*. 86(7): 509-15, 1994 Jul.

Based on the data from AAMC, SAIMS and MSGQ surveys, minorities are entering the specialty of their choice. However, minorities show a higher attrition rate than non-minorities.

Babbott D, Baldwin DC Jr, Killian DC, Weaver SO. Racial-ethnic background and specialty choice: a study of US medical school graduates in 1987. *Academic Medicine*. 64(10): 595-9, 1989 Oct.

This article used survey data from all US medical school graduates to determine that both before entering medical school and upon graduation, race did not influence specialty choice.

Booker JM, McPhail JL. American Indians in US medical education: Trends and Prospects. *Journal of Medical Education*. 54: 651-52, 1979 Aug.

This article reviews the trends for American Indian medical students from 1970-1978, comparing this group with other minority groups and with all students. The authors also describe the general health status of the American Indian population.

Bruhn JG. A response to history: a review of one medical school's efforts to graduate minority physicians. *Journal of the National Medical Association*. 70(11): 823-8, 1978 Nov.

In 1970, the University of Texas Medical Branch at Galveston implemented its first summer enrichment program for minority college students. This article describes the ways in which self-evaluation and student feedback guided changes to the program. The authors also report on the participants' acceptance into and progress through medical school.

Calkins EV, Willoughby TL, Arnold LM. Predictors of performance of minority students in the first two years of a BA/MD program. *Journal of the National Medical Association*. 74(7): 625-32, 1982 Jul.

This study reports on the value of cognitive and noncognitive factors in predicting minority student performance in a combined BA/MD program. For minority students more so than non-minority students, the noncognitive variables predicted academic performance. For both minorities and non-minorities, the

cognitive factors predicted performance. The authors conclude that admissions committees should consider personal as well as academic histories when evaluating minority applicants.

Cavazos LF (Office of Public Affairs, US Department of Education, Washington, DC). Restructuring education and its impact on medical education. *Academic Medicine*. 65(4): 230-3, 1990 Apr.

The author begins with a general description of the US educational system. He offers several options for educational reform. Medical school faculty can play a role by supporting educational restructuring and reaching out to minority children in elementary and junior high schools.

Cohen JJ (Association of American Medical Colleges, Washington, DC). Project 3000 by 2000 and health care reform. *Academic Medicine*. 69(9): 728, 1994 Sep.

This article evaluates the first two years of the AAMC Project 3000 by 2000. The author also predicts the effects that universal health care coverage would have on minority participation in medicine.

Cregler LL, Clark LT, Jackson EB Jr (Office of Academic Affairs, City University of New York Medical School, Sophie Davis School of Biomedical Education, New York). Careers in academic medicine and clinical practice for minorities: opportunities and barriers. *Journal of the Association for Academic Minority Physicians*. 5(2): 68-73, 1994.

Crowley AE. Medical education in the United States. Highlights of the 1987 education issue. *JAMA*. 258(8): 1005-6, 1987 Aug 28. (Original article can be found in: Anonymous. Medical education in the United States. *JAMA*. 243(9): 841-989, 1980 Mar 7.)

This article highlights medical student statistics for the 1986-87 school year, including a section on minority statistics. The author describes the patterns of medical school financing and changes in financial aid. The original article cites two differing views on the causes of decreased minority enrollment in the late 1970s: the National Medical Association attributes the decrease to medical school reactions to publicity around the Bakke case; and the AAMC attributes the decrease to a reduction in the pool of qualified minority applicants.

Culotta E, Gibbons A. Minorities in Science: Two Generations of Struggle. *Science*. 258: 1992 Nov 13.

This article reviews the past twenty-five years of programs designed to increase minority involvement in the sciences. The authors analyze why these programs have not worked, profiling the special needs of individual minority groups. They also describe recent, more promising approaches.

Davidson RC, Montoya R. The distribution of services to the underserved. A comparison of minority and majority medical graduates in California. *Western Journal of Medicine*. 146(1): 114-7, 1987 Jan.

By studying the patient populations of California medical school graduates, the authors found that minority graduates were more likely than majority graduates to: practice in health care personnel shortage areas; serve minority patients; and accept Medicaid patients. The authors conclude that in order to increase the number of physicians who will deliver services to traditionally underserved people, aggressive affirmative action programs must be undertaken by medical school admission committees.

Dove DB. Maintaining standards of medical education. Problems involved while increasing the proportion of students from minority groups. *JAMA*. 213(4): 599-601, 1970 Jul 27.

This article explores the current standards of medical education, the identity of minority medical students, and the relationship between the two. The author calls for a restructuring of the existing system of medical education which has produced wide variations in the quality of health care received by rich and poor and majority and minority populations. The author describes ways in which schools have already begun to take responsibility for this problem.

Durso C. Priming the pipeline. *The New Physician*. Pp 18-22, 1995 Apr.

Medical schools have not been able to sufficiently increase the number of minorities in medicine through increased recruiting efforts. Efforts are turning to long-term solutions involving junior high and high school students. This article profiles several recent, innovative approaches that private foundations, the government and individual schools are implementing with local youth.

DuVal M. Recruiting within minority groups. *Arizona Medicine*. 27(3): 107, 1970 Mar. The article is the dean's page in the *Arizona Journal of Medicine*.

The article describes one school's current efforts to improve the number of minority physicians graduating. In order to develop programs, the committee proceeded in three directions. The first was to begin a dialogue with minority communities to determine their barriers to medical education. The second involved providing high school teachers and counselors with admission criteria and financial aid information. The third approach brought the high school students into direct contact with medicine by providing laboratory jobs.

Etzel SI, Egan RL, Shevrin MP, Rowley BD (American Medical Association). Graduate medical education in the United States. *JAMA*. 262(8): 1029-37, 1989 Aug 25.

The AMA's annual report analyzes the data of a residency survey, including data on the number and nature of accredited programs, the number of residents in each and the financing mechanisms. The article includes a brief section on the numbers of minority residents.

Ficklin FL, Hazelwood JD, Carter JE, Shellhammer RH. The reduced load as a remedial program to increase retention of first-year medical students. *Journal of Medical Education*. 60(5): 406-8, 1985 May.

At the Indiana University School of Medicine, first year students in academic trouble were allowed to divide their first year course work into two years. The students felt that the program afforded time to develop better study skills, adjust to school, acquire a better understanding of the coursework and decrease stress. The authors conclude that this first year program was successful and that second year special programs are not necessary.

Franklin K. To have and to hold. *The New Physician*. Pp 13-18, 1993 Mar.

Medical schools are discovering that recruiting minorities is not enough due to the high attrition rates of minority students. This article discusses the cultural conflicts, lack of support and absence of role models that all contribute to the environment for minority medical students. The article also provides successful approaches that medical schools can adopt to remedy some of these obstacles.

Frierson HT Jr. Impact of an intervention program on minority medical students' National Board Part I performance. *Journal of the National Medical Association*. 76(12): 1185-90, 1984 Dec.

In order to improve minority students' board scores, this intervention program offered test-taking skills and cooperative learning methods. The pass rate for minority student participants exceeded previous minority student rates and the mean score was not significantly different than the mean score for non-minority students.

Goldsmith MF, Marwick C, Olson C. Minority physician training: critical for improving the overall health of a nation. *JAMA* 261(2): 187-9, 1989 Jan 13.

The authors interview the deans of four historically black college and university (HBCU) medical schools. The deans speak candidly about the importance of HBCUs, their missions, financial struggles, faculty strengths and future goals. The deans share their perceptions of how the current non-academic environment affects medical students.

Hanft RS. Minorities and the health professions in the 1980s. *Health Affairs*. 3(4): 71-84, 1984 Winter.

This article is an in-depth comparison of minority and non-minority student enrollment, institutional financing and changes in the nature of financial aid for students. The author outlines clear recommendations for federal and state governments and individual schools. The article addresses the trends in other health professions, including osteopathy.

Henry P, Bardo HR (Medical Education (MEDPREP), Southern Illinois University, School of Medicine, Carbondale, IL). Relationship between scores on developing cognitive abilities test and scores on medical college admissions test for nontraditional premedical students. *Psychological Reports*. 67(1): 55-63, 1990 Aug.

The Developing Cognitive Abilities Test is a good predictor for the MCAT score and therefore a good predictor of how a non-traditional student will fare in medical school.

Iglehart JK. Trends in health personnel. *Health Affairs*. 5(4): 128-37, 1986 Winter.

The article discusses trends from the 1960s through the mid-1980s in total student applications, enrollment, financial aid, types of loan programs and indebtedness. One section addresses minority statistics. In 1986, the AMA and AAMC both changed their strategies toward medical education and physician supply.

Johnson C (Duke University Medical Center, Durham, NC). The challenge for the minority physician: gaining quality health care for the underserved. *Journal of the National Medical Association*. 83(7): 563-8, 1991 Jul.

This article is the address by the president of the National Medical Association to the SNMA annual meeting. The speaker describes the difficulties that black students face before applying and once enrolled in medical school. The author compares the problems of 1895 when the NMA was founded to similar problems facing the black community today. Health care profits and spending, health insurance reform and the problems of modern practice are discussed.

Johnson DG. Conference on increasing representation in medical schools of Afro-Americans, Mexican-Americans, and American Indians. *Journal of Medical Education*. 44(8): 710-1, 1969 Aug.

This article describes the activities of a conference, sponsored by the AAMC's Group on Student Affairs. The conference attendees conclude that the main problems to increasing minority representation are identifying, motivating and recruiting minority students, many of whom have been exposed for years to a lack of role models, negative counseling, financial barriers and negative parental and cultural attitudes regarding professional careers. For minorities who do enter medical school, the problems include developing adequate curricula and tutoring, faculty role models,

housing and financial programs. The article also describes reservations of minority conference participants about implementing these steps.

Johnson EF, Moore IM. The LeMoyne-Owen College--UTCHS cooperative educational program: a model for minority recruitment. *Journal of the National Medical Association*. 71(12): 1199-201, 1979 Dec.

This article describes a cooperative education program between a local, predominantly black four year school and a medical branch of UT. UT provided the undergraduate college with faculty, curricular change models, equipment, career counseling, private funds and exposure to the medical facilities. As a result of this program, a substantial number of LeMoyne-Owen students were accepted into programs at UTCHS.

Johnson L Jr. The restraint of progress. Declining participation of blacks and other minorities in medical schools. *New York State Journal of Medicine*. 85(4): 135-6, 1985 Apr.

The author individually analyzes trends in applications, enrollments and graduation for all students and specifically minority students. He addresses the social and political reasons for the decrease in minority enrollment in the 1980s and the ways in which public education and affirmative action can help solve this problem.

Jolly P (Section for Operational Studies, AAMC, Washington, DC). Academic achievement and acceptance rates of underrepresented minority applicants to medical school. *Academic Medicine*. 67(11): 765-9, 1992 Nov.

The author uses AAMC data from 1978-79 through 1991-92 to examine the relationship between applicant characteristics and acceptance rates. Within the same MCAT and GPA range, underrepresented minority groups have a higher acceptance rate than other groups, demonstrating that schools are practicing affirmative action in admissions policies.

Jolly P Medical Education in the United States, 1960-1987. *Health Affairs*. 7(2 Supplement): 144-57, 1988.

This article provides a detailed overview of medical education from the health care personnel shortage in the 1960s to the predicted surplus of total physicians and undersupply of minority physicians in 1987. The author explains the causes for the general decrease in applicants in the late 1980s.

Jonas HS, Etzel SI, Barzansky B (Division of Undergraduate Medical Education, American Medical Association, Chicago, IL). Educational programs in US medical schools, 1993-94. *JAMA*. 272(9): 694-701, 1994 Sep 7.

Jonas HS, Etzel SI, Barzansky B (Division of Undergraduate Medical Education, American Medical Association, Chicago, IL). Educational programs in US medical schools. JAMA. 270(9): 1061-8, 1993 Sep 1.

Jonas HS, Etzel SI, Barzansky B (Division of Undergraduate Medical Education, American Medical Association, Chicago, IL). Educational programs in US medical schools. JAMA. 268(9): 1083-90, 1992 Sep 2.

In order to assess how health system reform will affect medical education and whether the current policies are meeting the goals for minority representation, all three articles use statistics from the LCME (Liaison Committee on Medical Education) annual questionnaire that was sent to deans of accredited medical schools. The articles compare the number of underrepresented minority applicants and accepted students with the total numbers. Each article analyzes the 5 year trend by minority and gender groups, showing that each ethnic group has increased in number, but the numbers are still too small to meet "3000 by 2000." The statistics can be misleading because they include Asian/Pacific Islanders and other minority groups not considered underrepresented under the title "minority."

Jonas HS, Etzel SI, Barzansky B (American Medical Association, Division of Undergraduate Medical Education). Undergraduate medical education. JAMA. 262(8): 1011-9, 1989 Aug 25.

The AMA report describes general medical school characteristics, such as faculty, student evaluation procedures, curricula, applications, enrollments and attrition rates. A brief section on minority statistics is included. Statistics on individual minority groups are also included in the section on decelerated schedules.

Jones DB Beating the odds. Minorities in medicine. Texas Medicine. 87(2): 38-46, 1991 Feb.

The article interviews and profiles several prominent minority physicians. The physicians comment honestly on the lack of role models, socioeconomic barriers and racism that prevent minorities from entering medical school and paying off debts after graduation. The physicians also address the historical changes for minorities in medicine, describing the newer, more subtle racism that affects minority students within schools. Each physician also offers inspiration and wisdom to upcoming minority students and physicians.

Jones F, Flowers JC (Associated Medical Schools of New York, NY). New York's statewide approach to increase the number of minority applicants to medical school. Academic Medicine. 65(11): 671-4, 1990 Nov.

This article provides a background of black and Latino health and income levels in New York. The authors describe the programs that New York medical schools are implementing in order to increase minorities in medicine. The programs include

junior and senior high school partnerships, parental involvement, and programs for students who applied but were not accepted to medical school.

Keith SN, Bell RM, Swanson AG et al. Effects of affirmative action in medical schools--A study of the class of 1975. *New England Journal of Medicine*. 313: 1519-1525, 1985.

This study examined the patient population characteristics of graduates from all US medical schools. Compared to majority graduates, minority graduates are more likely to practice in a federally designated area of health care personnel shortage and serve a greater percentage of minority patients.

Lee MW (University of Illinois College of Medicine, Urbana- Champaign). 'Programming' minorities for medicine. *JAMA* 267(17): 2391, 2394, 1992 May 6.

In this essay, the author quotes AAMC officials and the US Department of Education who conclude that after the progress of the mid-1970s in increasing minority representation in medical school, we have lost ground. Minority students need to be targeted at a young age, yet funds for science enrichment programs are sparse. The author highlights examples of successful programs and the obstacles encountered at each level, including elementary school, high school, college and medical school. Despite all of these efforts, we are not reaching parity; therefore, an additional approach needs to be determined.

Lieu TA, Schroeder SA, Altman DF. Specialty choices at one medical school: recent trends and analysis of predictive factors. *Academic Medicine*. 64(10): 622-9, 1989 Oct.

In this study, the authors report on the number of UCSF graduates during the 1980s entering primary care and technology-oriented specialties. The authors conclude that there has been no significant decrease in graduates entering primary care. Lifestyle and income factors do not significantly influence specialty choice. Compared to students entering technology-oriented specialties, those entering primary care were older, more likely to be women and less likely to be minorities.

Lipscomb WD, Mullan PB, Zepeda M, Price J (College of Human Medicine, Michigan State University, East Lansing). A retrospective analysis of a program designed to facilitate the entry of underrepresented minority students into medical school: program trends and outcomes. *Academic Medicine*. 68(10 Supplement): S10-2, 1993 Oct.

The authors evaluate minority student performance in a post-baccalaureate program which includes first year medical school courses, advanced undergraduate science courses, tutorials and academic monitoring. All of the students increased their GPAs and excelled in their courses. The authors recommend that medical schools link high risk minority applicants with post-baccalaureate programs in order to increase the pool of qualified minority applicants.

Lloyd DS. House staff of the seventies: decade of transition. *Journal of Medical Education*. 47(1): 30-4, 1972 Jan.

This paper, presented by an intern during the 1971 annual AAMC meeting, describes changes in the structure of residency programs. These changes were driven by medical students who realized the substandard or absent health care in Appalachia, the ghetto, the Mississippi delta, Indian reservations and migrant labor camps. Although the article does not address minorities in medicine, it provides insight into the reasons behind the push to involve more minorities in the medical system.

Lloyd SM Jr, Johnson DG, Mann M. Survey of graduates of a traditionally black college of medicine. *Journal of Medical Education*. 53(8): 640-50, 1978 Aug.

Howard University College of Medicine, a traditionally black institution, sets as a major goal the training of physicians to practice in underserved areas. A Howard University survey conducted in 1975-76 confirms that Howard graduates are meeting this goal, reaffirming the importance of training minority physicians.

Lutz D. Medical schools seek ethnic and cultural diversity. *Minnesota Medicine*. 74(1): 19-25, 1991 Jan.

The article discusses the efforts that medical schools in Minnesota, a predominantly non-minority state, are making to increase minority student enrollment. The author addresses the obstacles that individual schools face, as well as obstacles set by the broader social structure, such as minority children being tracked into low level math and science classes and the consequential poor preparation for future science programs. She delves into the specific social conflicts that cause different minority groups (Mexican-Americans, Southeast Asians, African Americans and especially American Indians) to have trouble academically and how the schools responded.

McGlenn S, Jackson EW (Medical/Dental Education Preparatory Program, Southern Illinois University School of Medicine, Carbondale, IL). Predicting the medical school progress of minority students who participated in a preparatory program. *Academic Medicine*. 64(3): 164-6, 1989 Mar.

This study reports the value of three variables--GPA, MCAT subtest scores and a committee review score based on personal and academic history--in predicting retention and progress for minority students who attended a preparatory program at Southern Illinois University School of Medicine (1976-1986). The committee review score predicted which students graduated versus those who did not graduate and only the MCAT Reading subtest score predicted which students graduated with their incoming class versus those who took longer to graduate. The authors conclude that traditional variables are limited in their ability to predict retention and progress rates for minority students. New variables for evaluation need to be found.

Mervis J. NIH looks inward and outside for ways to help minorities. *Nature*. 359(6392): 186, 1992 Sep 17.

Based on the observation that NIH has a poor record of hiring and promoting minorities, congress granted funds to NIH to implement programs to increase minority involvement in science. The programs include linking black colleges with research universities, helping students at two year colleges complete education at four year colleges, supporting science interest in high school and middle school students. NIH will also continue to support ongoing programs.

Murphy LP, McNair EW. A long-range evaluation of a biomedical science program for undergraduate minority students. *Journal of Medical Education*. 56(3): 196-7, 1981 Mar.

In 1969, Meharry Medical College established a summer enrichment program for minority undergraduates interested in health careers. The program participants were accepted to medical school at a much higher rate than minority groups as a whole.

Nager N, Saadatmand F (Department of Sociology and Anthropology, Howard University, Washington, DC). The status of medical education for black Americans. *Journal of the National Medical Association*. 83(9): 787-92, 1991 Sep.

Using statistics from the AAMC's *Minority Students in Medical Education: Facts and Figures IV*, the authors analyze the trends of minority students applying, enrolling and graduating from medical school and their chosen specialties from the late 1960s through the late 1980s. Although the absolute numbers of minorities in medicine are increasing, the proportion of minority physicians is decreasing, predicting a worsening health care situation for the future. The authors conclude with several recommendations, including aggressive recruitment, increased pre-medical and medical education funding, and incorporating alternative therapies into the medical system.

Nelson BW. Increasing minority group enrollment. A task force proposal. *JAMA*. 218(12): 1814-5, 1971 Dec 20.

Based on the 1970 AAMC report that the main barrier to medical education for minorities is the lack of financial aid, the current task force proposes that a single national organization assume responsibility for coordination, solicitation, and distribution of financial aid for minority students. Without federal assistance, all encouragement, meetings and programs to improve minority health in America will be in vain.

Nickens HW (AAMC). The rationale for minority-targeted programs in medicine in the 1990s. *JAMA*. 267(17): 2390, 2395, 1992 May 6.

In this essay, the author describes the ways in which minority physicians help rectify inequitable health care delivery. Minority physicians are more likely to: practice in underserved areas; enter primary care; provide culturally sensitive health care; organize a delivery system that is more appropriate to minority patients; practice racially unbiased medicine; and provide role models for minority communities.

Pavlik VN, Rankin BB, Vallbona C, Bacon RJ, Tristan MP (Department of Community Medicine, Texas Medical Center, Houston, Texas). Factors related to medical school application and acceptance in minority summer enrichment program students. *Journal of the National Medical Association*. 83(7): 628-32, 1991 Jul.

The authors analyze 5 years of follow-up application and acceptance data for minority/disadvantaged college students participating in Baylor College of Medicine's summer enrichment program. The study found that of the summer enrichment program participants: females were significantly less likely to apply to medical school than males; females had lower MCAT scores, even though their pre-program academic performance was comparable; and none of the pre-program variables (except MCAT) typically used to predict acceptance were accurate in actual acceptances. The authors questioned the appropriateness of medical school counseling for the female participants and recommended determining which measurable non-academic variables do influence acceptance.

Petersdorf RG (AAMC, Washington, DC). It's report card time again. *Academic Medicine*. 69(3): 171-9, 1994 Mar.

The outgoing AAMC president concludes that the number of underrepresented minority first year medical students and physicians is still too low, but significant progress is being made. He highlights four years between 1983 and 1992. He attributes the progress to the commitment by schools to "Project 3000 by 2000" as well as other outside efforts.

Petersdorf RG (AAMC). Not a choice, an obligation. *Academic Medicine*. 67(2): 73-9, 1992 Feb.

The author retraces the history of efforts to increase minority student enrollment. The vast majority of schools have some minority recruitment or enrichment program in place; therefore, something else needs to be done since we are not making sufficient progress. Since 1975, the acceptance rate of underrepresented minorities relative to other groups has been decreasing despite the fact that the gap between MCAT scores and GPAs between the two groups has been decreasing. The author cites reasons that minorities drop out of the pre-medical track during college. Since

so few minority high school students are prepared for college level science, medical school recruitment programs alone cannot increase minority enrollment.

Petersdorf RG, Turner KS, Nickens HW, Ready T (Division of Minority Health, Disease Prevention/Health Promotion, AAMC, Washington, DC). Minorities in medicine: past, present and future. *Academic Medicine*. 65(11): 663-70, 1990 Nov.

The authors describe the historical background of the AAMC's involvement in minority medical education. The article analyzes the trends in minority student applications, acceptances, residency choices and faculty numbers, as well as the outside factors that affect these trends. The authors report the results of an AAMC questionnaire outlining differences between minority and non-minority students. The authors describe the characteristics shared by schools with successful minority programs and profile in detail three of these programs (Xavier University, University of Tennessee and Baylor).

Pinn-Wiggins VW (National Medical Association, Washington, DC). Recognition of the plight of minorities in the educational process and health care system. *Journal of the National Medical Association*. 82(5): 333-5, 1990 May.

This article is the speech given by Dr. Pinn-Wiggins, as president of the NMA, to the National Association of Medical Minority Educators. The author briefly describes the current backlash to previous affirmative action programs. She then discusses the roles that the NMA and NAMME can play in supporting and guiding federal and private programs that influence minorities within medicine.

Pisano JC, Epps AC. The impact of MCAT intervention efforts on medical student acceptance rates. *Journal of the National Medical Association*. 75(8): 773-7, 1983 Aug.

This study determined that MCAT review courses increase the acceptance rate for minority students. The MCAT review course evaluated here included science instruction, study skills, practice questions and time management. There was no relationship between minority students' GPA and total MCAT score or any of the individual MCAT subtest scores.

Plagge JC, Sheverbush RL, Smith NE, Solomon LM. Increasing the number of minority enrollees and graduates: A medical opportunities program. 49(8): 735-45, 1974 Aug.

This article describes the beginning years of a University of Illinois program to increase and retain the number of minority medical students. The authors describe the challenges encountered during this program and the aspects of the program that contributed to its success.

Prieto DO. Native Americans in medicine: the need for Indian healers. *Academic Medicine*. 64(7): 388-9, 1989 Jul.

In this commentary piece, the author uses statistics and personal experience to describe the poverty level, health status and difficulty accessing health care for American Indians. The article reports on the decline during the 1980s in American Indian college and medical school enrollment, the relatively successful medical school performance of those enrolled, and the paradoxical difficulties experienced in matching residency programs. The article concludes with seven imperative steps toward improving American Indian health.

Prieto D. Minorities in medical schools, 1968-78. *Journal of Medical Education*. 53(8): 694-5, 1978 Aug.

This editorial was written in the tenth year of organized efforts to increase minority enrollment in medicine. The author describes the institutional discrimination of the 1950s and 1960s which drove the affirmative action programs of the 1970s. In 1978, litigation, such as the *Bakke v. the Regents of the University of California*, and other threats to minority involvement in medicine underscore the need for continued affirmative action programs and continued efforts in this area.

Potts JT Jr (Massachusetts General Hospital, Boston). Recruitment of minority physicians into careers in internal medicine. *Annals of Internal Medicine*. 116(12 Pt 2): 1099-102, 1992 Jun 15.

This article addresses the lack of minorities in medical school and medical faculty positions compared to the general population of minorities and the importance of increasing the number of minorities in medicine. The author describes the AAMC's Project 3000 by 2000 and outlines other approaches taken at Massachusetts General Hospital and Harvard Medical School.

Pumariega AJ. Top Priority: The importance of cultural competence in medical education for the improved health of minorities. *Journal for Minority Medical Students*. p20-26, 1996 Spring.

The author discusses the importance of and need for culturally competent health care delivery. He describes the ways in which institutions can change in order to adequately train health care providers. Central to this effort is increasing the number of minority medical students.

Ready T, Nickens H. Affirmative Action and Project 3000 by 2000. *Academic Medicine*. 71(6): 656-7, 1996 Jun.

This article describes the minority status within medicine from the 1960s up until the 1991 origin of Project 3000 by 2000. The authors focus on the progress made since the Project's inception and the legal obstacles to affirmative action.

Reitzes DC, Elkhaniyaly H. Black physicians and minority group health care-- the impact of NMF. *Medical Care*. 14(12): 1052-60, 1976 Dec.

This article describes the role of a private organization in funding medical education for minorities and successfully increasing the number of minority physicians in prominent positions.

Rivo ML, Satcher D (Division of Medicine, Bureau of Health Professions, Health Resources and Service Administration, Rockville, MD (Dr. Rivo) and Meharry Medical College, Nashville, TN (Dr. Satcher)). Improving access to health care through physician workforce reform. *Directions for the 21st century. JAMA*. 270(9): 1074-8, 1993 Sep 1.

The authors summarize the findings of the 1992 report of the Council on Graduate Medical Education (COGME), which Congress mandated to assess physician supply trends and make recommendations for federal and private sector solutions. The report compares the disparity between current percentages of minority physicians and medical students to percentages of minorities in the general population. Since minority physicians are more likely to practice in underserved, minority areas, reaching parity between the physician workforce and the general population is critical to providing health care, especially culturally appropriate care, to the nation's underserved populations.

Rodolfa E, Chavoor S, Velasquez J. Counseling services at the University of California, Davis: Helping Medical Students Cope. *JAMA*. 274(17): 1396-7, 1995 Nov 1.

Counselors discovered implicit rules that function within medical school, but conflict with the value system of many minority students. This conflict produces increased pressure for minority students. Minority students also deal with multiple identities between school and their community and face stereotypes within their medical student peer group.

Royal FS. Tomorrow's medicine beyond GMENAC. *Journal of the National Medical Association*. 74(1): 19-21, 1982 Jan.

The president of the NMA presented this speech at the 1981 annual AAMC conference. The author states that racial discrimination is more subtle and sophisticated than in the past. The NMA and AAMC should continue cooperating to ensure the revitalization of Meharry Medical College and to establish equal access to medical opportunities for minorities. The 1980 GMENAC report, which recommends decreases in medical student enrollments, blatantly disregards the shortage of minority medical students and the inadequate distribution of health care services to minority populations.

Roybal ER. Minorities in medicine: the next decade. *Journal of Medical Education*. 54(8): 652-5, 1979 Aug.

This article is based on the California US Representative's keynote address at the 1978 AAMC annual meeting. The author includes some interesting statistics to describe the health and physician supply disparities between minority and non-minority populations. The author discusses the current backlash against 1970s minority programs, including an analysis of the 1978 *Bakke v. Regents of the University of California* decision.

Schapiro H, McCombs RM. The disadvantaged student. *Journal of Medical Education*. 54(8): 672-3, 1979 Aug.

This letter to the editor describes the experiences of the faculty and administration at Eastern Virginia Medical School during the education of the first black medical student. The authors describe the flexible approach they took when the student began having academic difficulty. Because disadvantaged students require increased time and resources, the institution must be genuinely committed to these students. The authors conclude that societal benefits to enrolling such students is well worth the time and resources expended.

Scheffler RM, Yoder SG, Weisfeld N, Ruby G. Physicians and new health practitioners: issues for the 1980s. *Inquiry*. 16(3): 195-229, 1979 Fall.

The first half of the article focuses on the predicted oversupply of physicians and proposed federal policy changes in reaction to this oversupply. The article was written in 1979, when minority first year enrollment had leveled off after the 1975 peak, and soon after the Supreme Court's decision in the *Bakke* case, which made the future of medical schools' affirmative action programs unclear. The author evaluates problems in pre-matriculation, admissions, retention and post-graduate programs and offers federal and medical school- directed solutions.

Simon HJ, Covell JW. Performance of medical students admitted via regular and admission-variance routes. *Journal of Medical Education*. 50(3): 237-41, 1975 Mar.

Two groups of students entered the University of California, San Diego, School of Medicine: one group based on regular admissions and the other group, mostly black and Chicano students, based on admission-variance routes. Although the groups differed markedly upon admission, both groups passed Part I of the Boards and in clinical rotations differed only slightly. The authors conclude that high risk applicants are capable of performing successfully in medical school and attribute this success to a flexible curriculum, individualized assistance in test-taking skills and intensive tutorials.

Simpson CE Jr, Aronoff R (Division of Disadvantaged Assistance, HRSA, Rockville, MD). Factors affecting the supply of minority physicians in 2000. *Public Health Reports*. 103(2): 178-84, 1988 Mar-Apr.

The authors review the trends for minority student involvement in medicine from 1970 to 1985. After analyzing the forces that affect minority enrollment, the authors conclude that there are neither strong negative nor strong positive forces in effect. Therefore, the absolute number of black and Hispanic physicians will continue increase, but the ratio of minority physicians to minorities in the population will decrease.

Slater M, Iler E (City University of New York Medical School). A program to prepare minority students for careers in medicine, science, and other high-level professions. *Academic Medicine*. 66(4): 220-5, 1991 Apr.

This article describes a specific program in New York designed to increase minority junior high students' interest and abilities in science. The program offered tutoring, accelerated math and science classes, communication skills, mentors, summer programs and parental activities. The program participants drastically increased their high school attendance and graduation rates, state and national test scores and enrollment in college.

Sullivan LW (Department of Health and Human Services, Office of Public Affairs, Washington, DC). From the Secretary of Health and Human Services. The need for affirmative action in medical education. *JAMA*. 267(3): 343, 1992 Jan 15.

The Department of Health and Human Services is encouraging minority involvement in the sciences by funding collaborative projects with historically black colleges and universities, developing science interest programs for elementary and high schools and fostering cooperation between 2-year and 4-year colleges. Scholarships and programs are also being developed to support individual minority students entering science. Individual institutions can work with local elementary and secondary schools to begin long-term increases in the applicant pool.

Thomas AL. Project 75. A program to increase the number of minority medical students in US medical schools. *JAMA*. 218(12): 1816-8, 1971 Dec 20.

This article describes the origins and progress of Project 75, a program initiated by the National Medical Association and designed to discover, develop and sustain college students who desire a career in medicine. The Project 75 coordinators recognized two obstacles: subtle discriminatory practices and a lack of commitment to the program. The author attributed both obstacles to individuals' beliefs that quotas were wrong. The author counters this viewpoint and other common objections to affirmative action.

Thomson GE. Association for Academic Minority Physicians. October 28, 1989. Journal to the Association for Academic Minority Physicians. 1(2): 10-11, 1990.

In this Presidential Address, the author describes and statistically supports the trends from the 1970s through the 1980s of the poor health status of minorities, the federal cuts in social support programs and the worsening trends in minority involvement in medicine. Long before college, financial barriers begin to deter minority students from applying to medical school. Increasing the number of minority role models within medicine can help combat the pre-med drop off, biased counseling that occurs from college through residency programs and the lack of medical research focused on minority health issues.

Thurmond VB, Lewis L. Correlations between SAT scores and MCAT scores of black students in a summer program. Journal of Medical Education. 61(8): 640-3, 1986 Aug.

This study established a significant correlation between the SAT scores and MCAT scores of black students participating in a summer enrichment program at the Medical College of Georgia. The authors recommend that in order to increase the number of minorities in medicine and allow a more liberal arts-based pre-medical training, students with sufficient SAT scores can be conditionally accepted to medical school.

Trevino FM, Sumaya C, Miranda M, Martinez L, Saldana JM (School of the Health Professions, Southwest Texas State University, San Marcos). Increasing the representation of Hispanics in the health professions. Public Health Reports. 108(5): 551- 8, 1993 Sep-Oct.

The author provides demographic data for Latinos in the general population, relating the poor health status and low income levels to the need for more Latino students in medicine. The author also outlines federal and state government, as well as community-based, approaches to this problem.

Ugbolue A, Whitley PN, Stevens PJ. Evaluation of a preentrance enrichment program for minority students admitted to medical school. Journal of Medical Education. 62(1): 8-16, 1987 Jan.

The authors studied the effect of a summer pre-matriculation enrichment program on the first year performance of minority students. The program included basic science courses, study skills training and seminars on sociomedical issues. The minorities who participated arrived at school with lower MCAT scores than the minorities who did not participate, but made up their disadvantage by earning similar or better grades and progressing past the first year in equal numbers as the non-participants. The participants self-reported that the program helped to improve their study habits, academic adjustment and confidence.

Waldman B. Economic and racial disadvantage as reflected in traditional medical school selection factors. *Journal of Medical Education*. 52(12): 961-70, 1977 Dec.

Low income and minority applicants have lower GPAs and MCAT scores and therefore less competitive applications. When 1976-77 data is analyzed individually, however, only the factors related to race were significantly correlated with acceptance rates. Evaluating applicants solely on test scores would more adversely affect minorities compared to low income non-minorities.

Watts TC, Lecca PJ. Minorities in the health professions: a current perspective. *Journal of the National Medical Association*. 81(12): 1225-9, 1989 Dec.

The article describes the demographic variables that keep minority students at a disadvantage, and consequently keep the minority pool of medical school applicants small, regardless of recruitment efforts. The authors provide an in depth analysis of Tulane's successful minority recruitment and retention program, followed by a brief description of other programs.

Watts VG, Harris CT, Pearson W Jr (Office of Minority Affairs, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC). Course selections and career plans of black participants in a summer intervention program for minority students. *Academic Medicine*. 64(3): 166-7, 1989 Mar.

This study analyzed the choices of academically talented black high school students enrolled in a summer science enrichment program. For the most part, students chose the same advanced science courses regardless of gender or parental educational or occupational status. Since many minority students drop out of college pre-medical tracks, these intervention programs could strongly influence the number of black students remaining in the medical track.

Watts VG. New government proposals: the effect on minority medical education. *Journal of the National Medical Association*. 75(3): 247-9, 1983 Mar.

This speech was presented at the 1982 annual National Medical Association conference. The author describes the potential effects of the Reagan administration's proposed cuts to the education budget. Minority students will feel the cuts most acutely because of the lower parental income of most and the precarious foothold minorities currently hold in medicine. The author concludes with both recommended actions for individuals to take to oppose the budget cuts and an inspirational message for minorities in medicine.

Wellington JS, Montero P. Equal educational opportunity programs in American medical schools. *Journal of Medical Education*. 53(8): 633-9, 1978 Aug.

This article reports on the data of a 1974 survey responded to by administrators of US medical schools regarding the initial minority programs. The study concluded that

the majority of schools altered their admissions process for minority applicants and that these same schools had the highest number of minorities enrolled. Three-fourths of the schools changed their admissions criteria and most offered tutoring and academic support.

Weymouth RJ, Wergin JF. Pilot programs for minority students: one school's experience. *Journal of Medical Education*. 51(8): 668-70, 1976 Aug.

In 1973 and 1974, the Medical College of Virginia established two programs to academically assist minority medical students. The first, the Summer Institute for accepted medical students, did not affect academic performance directly, but did increase students' confidence and sense of security. The second program, the Special Track Program, involved mostly academic assistance to students part-way through the first year and increased their academic performance.

Whittico J Jr. The future of medicine and the recruitment and education of minority groups in health fields. *American Journal of Medical Technology*. 36(2): 84-90, 1970 Feb.

This article was presented as part of a general session, "The Future of Health Care," during the 37th annual ASMT convention in 1969. Technological advances must be used constructively to provide better health care. Young people, both Negro and white, need to be encouraged to enter medicine.

Willie CV. The recruitment and retention of minority health professionals. *Alabama Journal of Medical Science*. 19(3): 303-8, 1982 Jul.

The author eloquently supports the need for minority involvement in medicine, decreased emphasis on minority test scores and more flexibility in medical school curricula. Faculty need to be committed to minority students and culturally competent because nurturance is one of the chief causes of success in college. The greatest efforts toward remediation are needed for minority first years as they adapt to a new physical and spiritual environment.

Wilson DE. Minorities and the medical profession: a historical perspective and analysis of current and future trends. *Journal of the National Medical Association*. 78(3): 177-80, 1986 Mar.

This essay is truly an historical analysis of minorities in medicine, beginning with the first slave to purchase his freedom and practice medicine. The author begins his evaluation of recent trends with the 1950s. Current solutions to the lack of minorities in medicine include redefining the idea of "qualified" applicants and encouraging minorities to enter academic medicine and subspecialties.

Wong N. Psychiatric education and training of Asian and Asian-American psychiatrists. *American Journal of Psychiatry*. 135(12): 1525-9, 1978 Dec.

Although this article focuses on residents and practicing physicians, the discrimination towards Asian-Americans and its effect on this minority group can be related to all medical institutions. The author also discusses the effects of current training on the health care that Asian-American patients receive.

Yancey AG Sr. Medical education in Atlanta and health care of black minority and low-income people. *Journal of the National Medical Association*. 80(4): 467-9, 473-6, 1988 Apr.

This speech was delivered at the 1987 annual National Medical Association conference. The author discusses the lack of minority health care providers, inadequate health insurance and the effects on minority populations of closing public hospitals and increasing the number of for-profit hospitals. The article also addresses problems found disproportionately in the black community.

Student Questions

TO BE CONSIDERED FOR INCLUSION ON SELF-ASSESSMENT TOOL TO BE
DESIGNED
AND IMPLEMENTED IN PHASE II OF THIS PROJECT

What are the demographics of your school in terms of age, gender and ethnicity?

What is your age, gender, ethnicity?

What factors have made being a minority in medical school a positive experience?

How can your medical education and your school environment be improved to benefit minority students?

Does your school have resources and programs for minority students?

Recruitment?

Post baccalaureate?

Prematriculation?

Retention?

Support groups?

Office of Minority Affairs?

Do you feel these programs/resources are effective and have benefited minority students? Why or why not? Do these programs make things easier or more difficult for minority and/or majority students? Please explain.

What changes would you recommend in your school in order to improve minority student recruitment, retention and/or well-being?

Do you feel comfortable discussing issues of concern to minority students with administrators?

Are there minority professors and/or physicians on the basic science and clinical faculty? In the administration?

How does the presence or absence of minority faculty/administrators affect you?

Do faculty and classmates think that there are different admissions criteria for minority students? If so, in what ways? How does this affect your interactions with faculty and peers in the classroom, laboratories, or clinical rotations?

How do the faculty and administration respond when minority students have academic trouble? Is this similar to or different from the response to non-minority students? Please describe.

What are your financial concerns? Do you feel that your financial concerns differ for minority and majority students? Please describe.

Do you feel the social pressures for minority students are similar to or different from those of non-minority students? Please describe.

Do you have sources of support outside the resources that the school provides? Please describe.

Do administrators and faculty seek out your opinions about the situation for minority students at your school? If so, how do they respond to your concerns?

If you attend a majority school, how often do you interact personally with students of a different ethnicity? Are there barriers to these interactions? What factors in your school facilitate positive interactions?

What do you think are the major issues relating to minority medical education? What do you think might be the possible solutions to improve the problems you have identified?

ENDNOTES

-
- ⁱ Davidson, R., Montoya, R. The Distribution of Services to the Underserved, A Comparison of Minority and Majority Medical Graduates in California. *West J of Med*, 146(1):114-7, Jan, 1987.
- ⁱⁱ Keith SN, Bell RM, Swanson AG. Effects of affirmative action in medical schools-- A study of the class of 1975. *N Engl J Med* 1985;313:1519-25.
- ⁱⁱⁱ Hanft, R. Minorities and the health professions in the 1980s. *Hlth Affairs*, 3(4):71-84;Winter, 1984.
- ^{iv} Jonas, H., Etzel, S., Barzansky, B. Educational Programs in U.S. Medical Schools, 1993-1994. *JAMA*, 272(9):694-701;Sep 7, 1994.
- ^v Iglehart, J.K. Trends in Health Personnel. *Hlth Affairs*, 5(4):128-37;Winter, 1986.
- ^{vi} Jolly, P. Medical Education in the United States, 1960-1987. *Hlth Affairs*, 7(2 Suppl):144-157, 1988.
- ^{vii} Hanft, R. Minorities and the health professions in the 1980s. *Hlth Affairs*, 3(4):71-84;Winter, 1984.
- ^{viii} Nager, N., Saadatmand, F. The Status of Medical Education for Black Americans. *J Nat Med Ass*, 83(9):787-92;Sept, 1991.
- ^{ix} Wilson, D.E. Minorities and the Medical Profession: A Historical Perspective and Analysis of Current and Future Trends. *JNMA*, 78(3):177-80;Mar, 86.
- ^x Johnson, L. The Restraint of Progress. Declining Participation of Blacks and Other Minorities in Medical School. *NY State J Med*, 85(4):135-6;Apr, 1985.
- ^{xi} Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. *Inquiry*, 16(3):195-229;Fall, 1979.
- ^{xii} Hanft, R. Minorities and the health professions in the 1980s. *Hlth Affairs*, 3(4):71-84;Winter, 1984.
- ^{xiii} Johnson, L. The Restraint of Progress. Declining Participation of Blacks and Other Minorities in Medical School. *NY State J Med*, 85(4):135-6;Apr, 1985.
- ^{xiv} Jolly, P. Medical Education in the United States, 1960-1987. *Hlth Affairs*, 7(2 Suppl):144-157, 1988.

-
- ^{xv} Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. *Inquiry*, 16(3):195-229;Fall, 1979.
- ^{xvi} Thomas, A.L. Project 75. A Program to Increase the Number of Minority Medical Students in U.S. Medical Schools. *JAMA*, 218(12):1816-8;Dec 20, 1971.
- ^{xvii} Wilson, D.E. Minorities and the Medical Profession: A Historical Perspective and Analysis of Current and Future Trends. *JNMA*, 78(3):177-80;Mar, 86.
- ^{xviii} Petersdorf, R. Not a Choice, an Obligation. *Acad Med*, 67(2):765, Feb, 1992.
- ^{xix} Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. *Inquiry*, 16(3):195-229;Fall, 1979.
- ^{xx} Nager, N., Saadatmand, F. The Status of Medical Education for Black Americans. *J Nat Med Ass*, 83(9):787-92;Sept, 1991.
- ^{xxi} Petersdorf, R. Not a Choice, an Obligation. *Acad Med*, 67(2):765, Feb, 1992.
- ^{xxii} Hanft, R. Minorities and the health professions in the 1980s. *Hlth Affairs*, 3(4):71-84;Winter, 1984.
- ^{xxiii} Johnson, L. The Restraint of Progress. Declining Participation of Blacks and Other Minorities in Medical School. *NY State J Med*, 85(4):135-6;Apr, 1985.
- ^{xxiv} Roybal, E. Minorities in Medicine: the Next Decade. *J Med Educ*, 54(8):652-5;Aug, 1979.
- ^{xxv} Hanft, R. Minorities and the health professions in the 1980s. *Hlth Affairs*, 3(4):71-84;Winter, 1984.
- ^{xxvi} Crowley, A.E. Medical Education in the United States. Highlights of the 1987 Education Issue. *JAMA*, 258(8):1005-6;Aug 28, 1987.
- ^{xxvii} Jonas H., Etzel, S., Barzansky, B. Educational Programs in U.S. Medical Schools. *JAMA*, 268(9):1083-90, Sep 2, 1992.
- ^{xxviii} Jonas, H., Etzel, S., Barzansky, B. Educational Programs in U.S. Medical Schools. *JAMA*, 270(9):1061-8;Sep 1, 1993.
- ^{xxix} Association of American Medical Colleges. Minority Students in Medical Education: Facts and Figures, Editions 1995 and 1996.
- ^{xxx} Johnson, L. The Restraint of Progress. Declining Participation of Blacks and Other Minorities in Medical School. *NY State J Med*, 85(4):135-6;Apr, 1985.

-
- xxxⁱ Roybal, E. Minorities in Medicine: the Next Decade. *J Med Educ*, 54(8):652-5;Aug, 1979.
- xxxⁱⁱ Jonas, H., Etzel, S., Barzansky, B. Educational Programs in U.S. Medical Schools. *JAMA*, 270(9):1061-8;Sep 1, 1993.
- xxxⁱⁱⁱ Jonas, H., Etzel, S., Barzansky, B. Educational Programs in U.S. Medical Schools, 1993-1994. *JAMA*, 272(9):694-701;Sep 7, 1994.
- xxx^{iv} Johnson, L. The Restraint of Progress. Declining Participation of Blacks and Other Minorities in Medical School. *NY State J Med*, 85(4):135-6;Apr, 1985.
- xxx^v Association of American Medical Colleges. Minority Students in Medical Education: Facts and Figures, Editions 1995 and 1996.
- xxx^{vi} Petersdorf, R. Not a Choice, an Obligation. *Acad Med*, 67(2):765, Feb, 1992.
- xxx^{vii} Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. *Inquiry*, 16(3):195-229;Fall, 1979.
- xxx^{viii} Association of American Medical Colleges. Minority Students in Medical Education: Facts and Figures, Editions 1995 and 1996.
- xxx^{ix} Iglehart, J.K. Trends in Health Personnel. *Hlth Affairs*, 5(4):128-37;Winter, 1986.
- x^l Jolly, P. Medical Education in the United States, 1960-1987. *Hlth Affairs*, 7(2 Suppl):144-157, 1988.
- x^{li} Rivo, M., Satcher D. Improving Access to Health Care Through Physician Workforce Reform. Directions for the 21st Century. *JAMA*, 270(9):1074-8;Sep 1, 1993.
- x^{lii} Lee, M. 'Programming' Minorities for Medicine. *JAMA*, 267(17):2391, 2394;May 6, 1992.
- x^{liii} Jonas, H., Etzel, S., Barzansky, B. Educational Programs in U.S. Medical Schools, 1993-1994. *JAMA*, 272(9):694-701;Sep 7, 1994.
- x^{liv} Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. *Inquiry*, 16(3):195-229;Fall, 1979.
- x^{lv} Johnson, L. The Restraint of Progress. Declining Participation of Blacks and Other Minorities in Medical School. *NY State J Med*, 85(4):135-6;Apr, 1985.

^{xlvi} Nager, N., Saadatmand, F. The Status of Medical Education for Black Americans. *J Nat Med Ass*, 83(9):787-92;Sept, 1991.

^{xlvii} Crowley, A.E. Medical Education in the United States. Highlights of the 1987 Education Issue. *JAMA*, 258(8):1005-6;Aug 28, 1987.

^{xlviii} Babbott, D., Weaver, S., Baldwin D. Primary Care by Desire or Default? Specialty Choices of Minority Graduates of U.S. Medical Schools in 1983. *J Nat Med Assoc*, 86(7):509-15;July, 1994.

^{xlix} Nager, N., Saadatmand, F. The Status of Medical Education for Black Americans. *J Nat Med Ass*, 83(9):787-92;Sept, 1991.

^l Davidson, R., Montoya, R. The Distribution of Services to the Underserved, A Comparison of Minority and Majority Medical Graduates in California. *West J of Med*, 146(1):114-7, Jan, 1987.

^{li} Keith SN, Bell RM, Swanson AG. Effects of affirmative action in medical schools-- A study of the class of 1975. *N Engl J Med* 1985;313:1519-25.

^{lii} Davidson, R., Montoya, R. The Distribution of Services to the Underserved, A Comparison of Minority and Majority Medical Graduates in California. *West J of Med*, 146(1):114-7, Jan, 1987.

^{liii} Thomas, A.L. Project 75. A Program to Increase the Number of Minority Medical Students in U.S. Medical Schools. *JAMA*, 218(12):1816-8;Dec 20, 1971.

^{liv} Rivo, M., Satcher D. Improving Access to Health Care Through Physician Workforce Reform. *Directions for the 21st Century. JAMA*, 270(9):1074-8;Sep 1, 1993.

^{lv} Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. *Inquiry*, 16(3):195-229;Fall, 1979.

^{lvi} Hanft, R. Minorities and the health professions in the 1980s. *Hlth Affairs*, 3(4):71-84;Winter, 1984.

^{lvii} Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. *Inquiry*, 16(3):195-229;Fall, 1979.

^{lviii} Wilson, D.E. Minorities and the Medical Profession: A Historical Perspective and Analysis of Current and Future Trends. *JNMA*, 78(3):177-80;Mar, 86.

^{lix} Jolly, P. Medical Education in the United States, 1960-1987. *Hlth Affairs*, 7(2 Suppl):144-157, 1988.

lx Rivo, M., Satcher D. Improving Access to Health Care Through Physician Workforce Reform. Directions for the 21st Century. JAMA, 270(9):1074-8;Sep 1, 1993.

lxi Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. Inquiry, 16(3):195-229;Fall, 1979.

lxii Trevino, F., Sumaya, C., Miranda M., Martinez, L., Saldana, J. Increasing the Representation of Hispanics in the Health Professions. Pub Hlth Rep, 108(5):551-8;Sep-Oct., 1993.

lxiii Petersdorf, R. Not a Choice, an Obligation. Acad Med, 67(2):765, Feb, 1992.

lxiv Lee, M. 'Programming' Minorities for Medicine. JAMA, 267(17):2391, 2394;May 6, 1992.

lxv Petersdorf, R. Not a Choice, an Obligation. Acad Med, 67(2):765, Feb, 1992.

lxvi Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. Inquiry, 16(3):195-229;Fall, 1979.

lxvii Lee, M. 'Programming' Minorities for Medicine. JAMA, 267(17):2391, 2394;May 6, 1992.

lxviii Petersdorf, R. Not a Choice, an Obligation. Acad Med, 67(2):765, Feb, 1992.

lxix Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. Inquiry, 16(3):195-229;Fall, 1979.

lxx Lee, M. 'Programming' Minorities for Medicine. JAMA, 267(17):2391, 2394;May 6, 1992.

lxxi Trevino, F., Sumaya, C., Miranda M., Martinez, L., Saldana, J. Increasing the Representation of Hispanics in the Health Professions. Pub Hlth Rep, 108(5):551-8;Sep-Oct., 1993.

lxxii Hanft, R. Minorities and the health professions in the 1980s. Hlth Affairs, 3(4):71-84;Winter, 1984.

lxxiii Nager, N., Saadatmand, F. The Status of Medical Education for Black Americans. J Nat Med Ass, 83(9):787-92;Sept, 1991.

lxxiv Association of American Medical Colleges. Minority Students in Medical Education: Facts and Figures, Editions 1995 and 1996.

-
- lxxv Cohen, J. Project 3000 by 2000 and Health Care Reform. *Acad Med*, 69(9):728;Sept, 1994.
- lxxvi Jonas, H., Etzel, S., Barzansky, B. Educational Programs in U.S. Medical Schools, 1993-1994. *JAMA*, 272(9):694-701;Sep 7, 1994.
- lxxvii Rivo, M., Satcher D. Improving Access to Health Care Through Physician Workforce Reform. *Directions for the 21st Century. JAMA*, 270(9):1074-8;Sep 1, 1993.
- lxxviii Lutz D. Medical schools seek ethnic and cultural diversity. *Minnesota Medicine*, 74(1):19-25, Jan 1991.
- lxxix Trevino, F., Sumaya, C., Miranda M., Martinez, L., Saldana, J. Increasing the Representation of Hispanics in the Health Professions. *Pub Hlth Rep*, 108(5):551-8;Sep-Oct., 1993.
- lxxx Nager N, Saadatmand F. The status of medical education for black Americans. *J Nat Med Assoc*, 83(9): 787-92, Sept 1991.
- lxxxi Goldsmith MF, Marwick C, Olson C. Minority physician training: critical for improving overall health of the nation. *JAMA*, 261(2): 187-9, Jan 13, 1989.
- lxxxii Jolly P. Academic Achievement & Acceptance Rates of Underrepresented Minority Applicants to Medical School. *Acad Med*, 67:765-9;Feb, 1992.
- lxxxiii Mervis J. NIH looks inward and outside for ways to help minorities. *Nature*, 359(6392): 186, Sept 17, 1992.
- lxxxiv Jonas, H., Etzel, S., Barzansky, B. Educational Programs in U.S. Medical Schools. *JAMA*, 270(9):1061-8;Sep 1, 1993.
- lxxxv Slater M, Iler E. A program to prepare minority sutents for careers in medicine, science, and other high-level professions. *Academic Medicine*, 66(4): 220-5, Apr 1991.
- lxxxvi Rodolfa E, Chavoor S, Velasquez J. Counseling services at the University of California, Davis: Helping medical students cope. *JAMA*, 274(17): 1396-97, Nov 1, 1995.
- lxxxvii Johnson, L. The Restraint of Progress. Declining Participation of Blacks and Other Minorities in Medical School. *NY State J Med*, 85(4):135-6;Apr, 1985.
- lxxxviii Ficklin FL, Hazelwood JD, Carter JE, Shellhamer RH. The reduced load as a remedial program to increase retention of first-year medical students. *J Med Educ*, 60(5): 406-8, May 1985.

lxxxix Moore, R. University of Tennessee, Memphis. Personal communication, May, 1996.

xc Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. *Inquiry*, 16(3):195-229;Fall, 1979.

xcI Moore R. University of Tennessee, Memphis. Personal communication, May, 1996.

xcII Northcross P. University of Tennessee, Memphis. Personal communication, May 1996.

xcIII ** Focus group session

xcIV Anonymous. Medical Education for minority group students. *JAMA*, 210(8): 1586, Nov 24, 1969.

xcV Moore, R. University of Tennessee, Memphis. Personal communication, May, 1996.

xcVI Petersdorf, R. Not a Choice, an Obligation. *Acad Med*, 67(2):765, Feb, 1992.

xcVII Hanft, R. Minorities and the health professions in the 1980s. *Hlth Affairs*, 3(4):71-84;Winter, 1984.

xcVIII Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. *Inquiry*, 16(3):195-229;Fall, 1979.

xcIX Pavlik VN, Rankin BB, Vallbona C, Bacon RJ, Tristan MP. Factors related to medical school application and acceptance in minority summer enrichment program students. *J Nat Med Assoc*, 83(7): 628-32, Jul 1991.

c Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. *Inquiry*, 16(3):195-229;Fall, 1979.

ci Moore, R. University of Tennessee, Memphis. Personal communication, May, 1996.

cII Northcross P. University of Tennessee, Memphis. Personal communication, May 1996.

cIII Moore, R. University of Tennessee, Memphis. Personal communication, May, 1996.

cIV Northcross P. University of Tennessee, Memphis. Personal communication, May 1996.

^{cv} DuVal M. Recruiting within minority groups. *Arizona Medicine*, 27(3): 107, Mar 1970.

^{cvi} Wilson, D.E. Minorities and the Medical Profession: A Historical Perspective and Analysis of Current and Future Trends. *JNMA*, 78(3):177-80;Mar, 86.

^{cvi} Johnson, L. The Restraint of Progress. Declining Participation of Blacks and Other Minorities in Medical School. *NY State J Med*, 85(4):135-6;Apr, 1985.

^{cvi} Hanft, R. Minorities and the health professions in the 1980s. *Hlth Affairs*, 3(4):71-84;Winter, 1984.

^{cix} Scheffler R., Yoder S., Weisfield, N., Ruby G. Physicians and New Health Practitioners: Issues for the 1980s. *Inquiry*, 16(3):195-229;Fall, 1979.