PHYSICIANS FOR VIRGINIA
PART I
A STUDY OF VIRGINIA'S MEDICAL SCHOOLS

REPORT OF
THE STATE COUNCIL OF HIGHER EDUCATION
to
THE GOVERNOR
and
THE GENERAL ASSEMBLY OF VIRGINIA

SENATE DOCUMENT No. 15

COMMONWEALTH OF VIRGINIA
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PHYSICIANS FOR VIRGINIA—PART I

A Report on a Study of Virginia's Medical Schools

CONTENTS

CONTENTS—(Continued)

LIST OF TABLES

LIST OF TABLES (Continued)

COMMONWEALTH OF VIRGINIA

STATE COUNCIL OF HIGHER EDUCATION

Room 301, Finance Building

Richmond 19, Virginia, December 9, 1963.

The Honorable Albertis S. Harrison, Jr., Governor of Virginia

Members of the General Assembly, Commonwealth of Virginia

Senate Joint Resolution No. 44, approved by the 1962 General Assembly, directed the Council of Higher Education to "make a study and report on the role, goals, and extent to which the existing medical schools are meeting the needs for qualified medical practitioners, and whether the State is meeting its obligations and responsibilities in providing adequate opportunities for students, who desire to do so, to obtain a medical education in this state."

The Council of Higher Education has the honor and pleasure to submit herewith a report of that study. A second report entitled "Physicians for Virginia—Part II" is being published in response to the directive of House Bill 229, 1962 General Assembly, asking the Council to "make a careful and comprehensive study of the feasibility and advisability of establishing a private school of medicine in the Tidewater area."

Both studies were conducted under the direction of an advisory committee, with Mr. Thomas C. Boushall of Richmond as Chairman, and Mr. James Gilliam, Jr., of Lynchburg as Vice-Chairman. The remaining members of the advisory committee are listed on page 2 of this report. Mr. James W. Bailey, the Council's Assistant Director for Program Studies, was study director. At its meeting on December 9, 1963, the Council of Higher Education voted to accept and endorse the findings and recommendations of the report.

We wish to take this opportunity to acknowledge publicly our indebtedness to the many persons and organizations in Virginia and elsewhere who contributed their time, information and counsel in the development of this report. These include not only the distinguished members of the advisory committee, but the deans and staffs of the State's two medical schools, the State Health Commissioner, the Virginia Council on Health and Medical Care, the Virginia Board of Medical Examiners, the American Medical Association, the Association of American Medical Colleges, the U. S. Public Health Service, and several consultants on medical education. Our deep and sincere appreciation to them is herewith extended.

Respectfully submitted,

WILLIAM HUGH McFARLANE, Director.

A SUMMARY OF CONCLUSIONS

1. There is a growing demand for increased medical services in Virginia and throughout the United States, caused by population growth and change, increased use and changing patterns of medical service and new medical knowledge.

2. The ratio of physicians to population in Virginia is below that of the nation (by 18 per cent), although both ratios have been fairly stable over a period of years. Physician shortages in some areas, in some specialties and in a number of hospitals, together with population increases and increasing demands for medical services make it imperative that more physicians be graduated in Virginia in the years ahead.

3. Virginia has approximately 5,000 physicians of which almost 700 are Federal employees and 250 are retired. Physicians tend to concentrate in urban areas, leaving many rural areas without adequate medical care. Approximately 57 per cent of Virginia's physicians are graduates of the two State medical schools. Although 70 per cent of all physicians are in private practice, only 30 per cent are now in general practice (compared with 40 per cent six years ago).

4. The number of graduates from the two medical schools has decreased over the last few years. Part of this decrease is due to the withdrawal of West Virginia students who had attended MCV under contract arrangements prior to the development of a four-year school in that state. There have also been a higher number of academic failures in recent years.

5. The training of physicians is essentially a national problem and medical schools, even when State-supported, are national resources because of the great migration of students and graduates. At the present time, Virginia is gaining more practicing physicians per year than are graduated from the two schools combined. Virginia must contribute its share of physicians.

6. The most important factor in determining the location of a physician's practice is the place where he takes his residency training. Thus, if Virginia is to retain its graduates and attract other graduates, there must be more attractive internships and residency programs in hospitals in Virginia.

7. Virginia now provides direct tax support for two of the 42 public medical schools in the country. It is one of only five states providing such support for more than one public school. There are 45 private medical schools for a total of 87 in the United States.

8. Although medical school applicants in the U. S. had reached their lowest point in 1961, there have been some significant increases in the last two years. Only one applicant out of every two (1.8) is accepted, however.

9. Virginia schools have received an increasing number of applications in recent years—mostly from out-of-state residents. Virginians are given preference if they are qualified, then remaining vacancies in first-year classes are filled with qualified out-of-state applicants. Although there has been some improvement in the last three years, there are not enough Virginia students entering medical schools anywhere.

10. Medical training is the most costly type of professional training available today—both from the standpoint of time involved and the actual cost to obtain it. More financial support will need to be made available for worthy students who desire to study medicine but who can't afford it.

11. Virginia's medical schools are health centers with programs in education, research and patient care. Educational programs include: undergraduate medical education, training in paramedical and health-related fields, graduate programs leading to advanced degrees and intern and resident training programs.

12. Research programs are conducted by both schools, mostly with support from Federal funds. Such programs are basic in modern medicine, both for the advancement of knowledge and the training of future physicians. Although a balance must be maintained between teaching and research and patient care, there is no evidence of imbalance in either medical school.

13. Large numbers of patients are essential in medical school teaching hospitals. Both medical schools, however, appear to rely heavily on fee-paying patients in order to supplement teaching staff salaries in the medical school. Also, indigent patients without proper financial support from local governments, often become a direct cost to the State and an indirect burden to the medical school.

14. It is difficult to secure qualified full-time basic science faculty members. To compete effectively for such staff it is necessary to have good salaries, adequate facilities and opportunities for research. Virginia's schools rely on volunteer part-time clinical teaching by practicing physicians to provide a necessary balance in the instructional program.

15. With optimum expansion of the two existing medical schools over the next eight to ten years, approximately 200 physicians could be produced each year. This number would be required to keep up with population increases.

16. The proposal to construct and operate a new, private, four-year medical school in the Hampton Roads area would be a welcome addition to the State's medical education resources by 1975. More physicians than the existing schools can produce will be needed by then to help: (1) overcome shortages of physicians; (2) meet the increasing demands of a growing population beyond 1975; (3) make the State less dependent upon an uncertain supply of foreign medical graduates; and (4) meet increasing demands for medical care that could bring Virginia closer to the national level of health care as measured by physician/population ratios.

17. Thus, Virginia can be assured of having more physicians to meet its various needs in the years ahead by: (1) encouraging and supporting more Virginia students in their efforts to complete medical training; (2) expanding the existing medical schools to provide more opportunities for training; (3) providing more and better internships and residencies in Virginia hospitals; and (4) encourage the development of the proposed private, four-year medical school in Hampton Roads.

PHYSICIANS FOR VIRGINIA—PART I

(A Report on a Study of Virginia's Medical Schools)

INTRODUCTION

The 1962 General Assembly of Virginia directed the State Council of Higher Education to make studies on matters relating to the training of qualified physicians:

1. Senate Joint Resolution No. 44 directed the Council to "make a study and report on the role, goals, and extent to which the existing medical schools are meeting the needs for qualified medical practitioners, and whether the State is meeting its obligations and responsibilities in providing adequate opportunities for students, who desire to do so, to obtain a medical education in this State." (Appendix A.)
2. House Bill 229 directed the State Council to "make a careful and comprehensive study of the feasibility and advisability of establishing a private school of medicine in the Tidewater area."

With two directives aimed at related concerns, it was deemed appropriate to treat these two studies as parts of a general comprehensive study of medical education in Virginia. The need for a third medical school in the State must be based upon a thorough review of the probable needs for physicians and the potential of the existing schools to meet these needs.

The basic objective of these studies is to provide the General Assembly of Virginia with factual information and professional judgment on the current status and needed future developments of medical education in the Commonwealth if both the needs of students for opportunities to study medicine and the needs of citizens for medical care are to be met.

This report presents findings and recommendations relating to the study directed by Senate Joint Resolution No. 44. A separate report deals with findings and recommendations relating to House Bill 229.

Although the Council of Higher Education, through its staff, initiated and developed the concurrent studies on medical education, these studies could not have been completed under the limitations of time, staff manpower and financial resources available except for the invaluable assistance rendered by many persons in Virginia and throughout the country.

The staff enjoyed the advice and counsel of an Advisory Committee on Medical Education composed of members of the General Assembly, members of the medical profession in Virginia and laymen. Mr. Thomas C. Boushall from Richmond and Mr. James Gilliam, Jr., from Lynchburg, served as chairman and vice-chairman of the Committee, respectively. Other members included: Senator Joseph C. Hutcheson of Lawrenceville, Senator Landon Wyatt of Danville, Delegate Paul Manns of Bowling Green, Delegate French Slaughter of Culpeper, Dr. Mason Andrews, of Norfolk, Dr. Harry Bates of Arlington, Dr. Russell Buxton of Newport News, Dr. John W. Davis, Jr. of Lynchburg, Dr. William J. Hagood, Jr. of Clover, Dr. Mack Harris of West Point, Dr. Charles D. Smith of Roanoke, and Dr. John C. Watson of Alexandria.

Special thanks are due Dean Thomas Hunter and Dean Kenneth Crispell of the University of Virginia and Dean William Maloney and Dean Kinloch Nelson of the Medical College of Virginia, who, with their respective staffs, contributed information and unfailing cooperation throughout the study.

Appreciation is also due Dr. Russell M. Cox, Secretary-Treasurer, Virginia Board of Medical Examiners; Dr. Mack Shanholtz, State Health Commissioner; and Mr. Edgar Fisher, Director of the Virginia Council on Health and Medical Care for their many contributions to the study.

Much information and wise counsel were gained from the following consultants: Dr. Ward Darley and Dr. Lee Powers of the Association of American Medical Colleges, Dr. Walt Wiggins and Dr. Glen Leymaster of the American Medical Association, Dean William Willard of the University of Kentucky School of Medicine, Dean Vernon Lippard of the Yale University School of Medicine and Dr. Paul Peterson, Mrs. Maryland Pennell, Miss Marion Altenderfer and Miss Ruth Raup of the Public Health Service of the U. S. Department of Health, Education and Welfare.

It is only through the contributions made by these and other persons that this study has been brought to its present stage of completion. The final responsibility for the findings and recommendations as well as the shortcomings, must remain, however, with the staff of the Council of Higher Education.

Chapter 1

THE GROWING NEED FOR MEDICAL SERVICES

Several recent federal reports,[1] regional reports[2] and other studies by the American Medical Association and the Association of American Medical Colleges have stressed the need for expanded programs of medical education to provide enough physicians for the health care of our rapidly increasing population. The Nation's increasing need for physicians is related to at least four major phenomena: (1) population growth and change; (2) increasing use of medical services; (3) changing patterns of health service; and (4) advances in medical knowledge.

Population Growth and Change

It is estimated that the population of the United States may reach 235 million by 1975.[3] Although recent projections indicate that this estimate may be high, there will be significant increases in the total U. S. population during the next ten to fifteen years.

The number of persons aged 65 and over will increase by five million and the number of children under 15 is expected to increase by at least 18 million. These figures are significant in the light of existing patterns of physician care. Both children and older persons demand more medical services than young people and middle-aged adults, as shown in Table 1.[4]

TABLE 1

PHYSICIAN VISITS PER PERSON PER YEAR

Age	Visits
Under 5	6.4
5-24	4.2
25-64	5.4
65 and over	6.8
All ages	5.3

Not only the increase in total population but also the greater proportion of younger and older persons will require additional medical care.

Increasing Use of Medical Services

The American people are demanding more medical care today than ever before. The factors that have brought about this demand include: improved economic and educational status,[5] the trend toward urbanization, and the growth of hospital and medical insurance. At the same time, because of the advances in knowledge, medicine has more services to offer to the health of all citizens. Further increases in the economic status and educational attainments of the people of the United States will

[1] *Federal Support of Medical Research,* Report presented before the Senate Committee on Appropriations, May 1960;

Physicians for a Growing America, Report on the Surgeon General's Consultant Group, Frank Bane, Chairman; U. S. Public Health Service, October, 1959;

The Advancement of Medical Research and Education, Report of the Secretary's Consultants, Stanhope Bayne-Jones, Chairman; HEW, June, 1958.

Winfred L. Godwin, *Physicians for the South,* SREB, 1960.

[3] U. S. Bureau of the Census, *Statistical Abstract of the U. S.,* 1958.

[4] *U. S. National Health Survey,* November, 1958.

[5] *Ibid.*

very likely create even greater demands for medical services in the future.

The proportion of the American people now living in urban areas has increased to approximately two-thirds of the entire population, and this proportion is expected to increase even further in the coming years.[1] The continuing trend to urbanization will provide additional pressures for more medical care because people who live in or near cities tend to see doctors more often than do those who live in rural areas.

Another factor that has tended to increase medical service is prepaid hospital and physician insurance. The number of persons covered by some type of hospital insurance has increased from approximately 12 million in 1940 to approximately 123 million in 1958, or an increase from nine to 72 per cent of the population.[1]

Changing Patterns of Health Service

Not only have changes been taking place in the increased use of medical services, but physicians themselves have been changing in the patterns of health services they have sought to provide the general public.

In 1931, approximately 85 per cent of all physicians were engaged in private practice. By 1962, only 66 per cent were so engaged. In recent years, growing numbers of physicians have entered positions in full-time teaching, research, public health, industrial medicine, military service and other activities. This group, in number, has quadrupled in the last 30 years, while the total number of physicians has increased by only 65 per cent.

From 1931 to 1962, the percentage of physicians engaged in full-time specialization had increased from approximately 16 per cent to approximately 50 per cent. Table 2 shows numbers and trends in the type of physician service for selected years from 1931 to 1962. The growth of specialization has been brought on largely by the rapid increases in medical knowledge. Along with the increase of specialization and the diminution of the general practitioner, medical practice has become less individualistic and more institutionalized through the use of clinics and hospitals. Doctors have formed group practices in order to serve more familities with a greater variety of specialized training in a more efficient manner than was ever possible before. Hospital emergency rooms are serving a greater number of patients who are unable or unwilling to call upon the help of a family physician after normal working hours or on weekends.

The problem of the shortage of general practitioners has been felt more keenly in rural areas and in small communities, where physicians who retire cannot be replaced easily. Modern methods of communication and transportation, however, have helped to ease this problem to some extent. Physicians engaged in clinical teaching, public health service, industrial medicine, and military services are actually providing health care for large segments of the population. These services tend to help offset the decreasing proportion of physicians in private practice.

Many of the factors cited above have helped the modern physician to increase his efficiency. Thirty years ago, 44 per cent of the average doctor's visits were in the home. Today, this figure is less than 10 per cent. In 1930, the average physician saw about 50 patients a week, now he sees

[1] *Physicians for a Growing America*, p. 7.

TABLE 2

TYPE OF PHYSICIAN (M.D.) SPECIALTY IN THE U.S. FOR SELECTED YEARS [1]

Type of Service	Number and Percentage of Physicians					
	1931		1949		1962	
	No.	%	No.	%	No.	%
TOTAL PHYSICIANS	158,406	100.0	206,277	100.0	259,105	100.0
Full-time Specialists	24,826	15.7	62,688	30.4	129,838	50.1
Medical Specialists	6,674	4.2	19,467	9.4	41,710	16.1
Surgical Specialists	14,450	9.1	30,884	15.0	58,813	22.7
Psychiatry & Neurology	1,401	.9	4,720	2.3	12,378	4.8
Other Specialties	2,301	1.5	7,617	3.7	16,937	6.5
Part-time Specialists and General Practitioners	120,399	76.0	110,441	53.5	79,217	30.6
Training Programs	7,200	4.5	23,448	11.4	37,810	14.6
Retired, Not in Practice	5,981	3.8	9,700	4.7	12,240	4.7

more than 100 in that length of time.[2] This advantage, however, has tended to disappear because the average citizen today consults a doctor about twice as often as he did in 1930. The average doctor still must work sixty hours per week in order to keep up with the heavy demand for his services.

The increased number of hospital beds and the increased utilization of hospital services has been another important factor in the changing pattern of medical service in the United States. Since 1930 the number of beds in general and allied special hospitals has increased from 3.7 to 4.6 per 1,000 persons, or more than 70 per cent.[3]

Thus, the rapid growth of medical knowledge, changes in the techniques of providing medical services, urbanization of the population, substitution of office visits for home visits, increased use of hospitals and clinics, and greater utilization of nurses and other medical auxiliary personnel have not only affected the manner in which the modern physician is fulfilling his duties but these factors have also increased the demand for medical care.

National Supply of Physicians

In 1931, the United States had approximately 158,400 M.D. physicians of all types, or about 128 physicians for each 100,000 population. During the next two decades, the supply of physicians increased at a slightly faster rate than did the population. By 1962, the physician/population ratio had reached approximately 138 physicians for every 100,000 population.[4] In general, the physician/population ratio has remained fairly stable over the past 30 years. At the present time, however, the ratio may be in danger of declining due to continuing increases in population without corresponding increases in the number of medical school

[1] Paul Peterson and Maryland Pennell, *Health Manpower Source Book:* Section 14, Medical Specialists, U. S. Public Health Service, 1962, p. 7. Figures include Federal and non-Federal physicians as well as interns and residents.

[2] *Physicians for a Growing America*, p. 7.

[3] *Ibid*, p. 7.

[4] *Health Manpower Source Book*, Section 14, p. 7.

graduates. The supply of physicians depends primarily on the number of students graduated from medical schools.

The number of graduates from U. S. medical schools has not increased materially over the last eight to ten years, as shown in Table 3. In order to maintain the present physician/population ratio, the Association of American Medical Colleges estimates that U. S. medical schools must graduate at least 10,500 physicians per year by 1975.

The Bane report[1] suggested that additional graduates could be produced by a combination of the following: (1) expansion of existing medical schools, (2) development of new two-year basic medical science schools, and (3) construction of new four-year medical schools. Even with the optimum expansion of existing schools to produce as many as 1,000 more graduates per year, it would still require some 20 new medical schools, each graduating 100 students per year, to meet the growing needs and demands of medical care in the United States by 1975.

Physician/Population Ratio.—The use of the physician/population ratio as a national index of need for physicians, although not ideal, does constitute the best general measure for planning the future medical care

TABLE 3

NUMBER OF SCHOOLS, STUDENTS AND GRADUATES IN THE MEDICAL SCHOOLS IN THE UNITED STATES FOR SELECTED YEARS: 1951-63 [2]

Year	Number of Schools	Total Enrollment	Graduates
1951-52	79	27,076	6,080
1953-54	80	28,227	6,861
1955-56	82	28,639	6,845
1957-58	85	29,473	6,861
1959-60	85	30,084	7,081
1961-62	87	31,078	7,168
1962-63	87	31,491	7,264

which can be brought to bear on the problem at the present time.[3] Physician care is essentially a national problem. If it is assumed that the national index (ratio) will provide a reasonable level of health care, and if the national level is met in terms of quantity of physicians, then by proper distribution among the states, the needs of the population can be met in all areas of the Nation.

Until there is a better measure of future needs, it would be prudent to use this ratio as a general guide in planning for the production of physicians over the next few years. In utilizing this index, however, its defects should be acknowledged so that projected figures are recognized as estimates and not endowed with a finiteness which they do not possess.

Foreign Medical Graduates.—The United States has been able to maintain an overall physician/population ratio of about 137 physicians per 100,000 population in recent years only by accepting a large number of foreign-trained physicians. In 1959, approximately 8,400 foreign medical graduates from 91 countries were serving in U. S. hospitals. This

[1] *Physicians for a Growing America*, p. 56.

[2] "Medical Education in the United States," *JAMA*, Vol. 182, Nov. 1962, p. 165.

[3] *JAMA*, Vol. 171, Nov., 1959, pp. 1508-9.

number represented 24 per cent of the intern and resident staffs of these hospitals. If it were not for the 1,400 to 1,600 foreign medical graduates coming into this country each year, many hospitals would find it very difficult to operate effectively, and the total physician/population ratio would be in danger of declining.

Foreign medical graduates seek training as interns and residents in U. S. hospitals with the intention of returning to their own country after training. Many who come, however, actually stay and become citizens of this country. The net result of this exchange is that other countries train physicians that leave and never return. Often, these countries have a greater need for medical care than does the United States. Long range planning for physician needs for the United States should not be dependent upon foreign medical graduates.

Medical School Developments

Historical Background.—Medical education in America began with groups of physicians forming "medical faculties," and securing charters from state legislatures which gave them the right to conduct medical training and grant degrees. More than 450 such schools existed at one time, but by 1900 there were only 160 in operation, including a few university medical schools. By 1909, 85 of the 96 existing medical schools required some college work of students before they enrolled to study medicine. Since that time, rapid strides have been taken in the development of modern medical schools. More of the early schools fell by the wayside because physicians were busy practicing and fewer students came for training.

In 1930, there were 76 medical schools, and 4,735 students were graduated in 1931. At the beginning of the 1962-63 academic year, there were 87 medical schools approved by the American Medical Association and the Association of American Medical Colleges. Of this total, 84 are four-year institutions, and three have two-year basic medical science programs. Forty-two schools are publicly-supported and 45 are private.[1] Nine new four-year medical schools have been developed since 1940, and seven schools have been developed from two-year schools to four-year institutions during the same period. Of the sixteen medical schools that have developed from two to four years or have started as four-year institutions since 1940, four have been under private auspices.

The University of West Virginia had operated a two-year medical school for a number of years, sending some its students to the Medical College of Virginia for their final two years of training. West Virginia graduated its first four-year class in 1962. Virginia is one of only five states that provides direct state tax support to more than one public medical school. New York, California, Michigan and Texas all support two schools. Texas and California have added second schools since 1940. Several other states, such as Pennsylvania and Florida, provide state support of approximately $3,000 per student in attendance at private medical schools.

Proposed Medical School Developments.—In response to the national call for more medical school graduates, the following nine universities have committed themselves to begin new medical programs (either four-year or two-year programs that will eventually become four-year) : Arizona, Brown, California, Connecticut, Massachusetts, New Mexico, Pennsylvania State, Rutgers, and Texas. Mt. Sinai Hospital in New York is

[1] *JAMA*, Vol. 186, November, 1963, p. 661.

also committed to organizing a private medical school. Several Western states that have no medical schools are seeking to develop a cooperative arrangement among themselves and other states to provide medical education programs that are beyond the present resources of the individual states. In addition to the current study in Virginia, studies of the feasibility of establishing new medical schools have been initiated in New York, Ohio, Maryland, Michigan and Hawaii.

Another approach to the problem of producing more physicians involves accelerated programs where students may complete medical training in shorter periods of time. Some students can't afford to spend the time and money required for college and medical school of four years each. Johns Hopkins, Northwestern University, Boston University, Pennsylvania State University and Jefferson Medical College are experimenting with reducing the college programs and medical programs to about six years rather than the usual eight.

In all the urgency to meet national demands for more doctors, the problem of providing proper medical services is not alone that of producing more physicians but of educating physicians better and obtaining a more satisfactory distribution and effective utilization of existing doctors and future graduates.

Chapter 2

PRESENT SUPPLY AND TRAINING OF PHYSICIANS IN VIRGINIA

Virginia's Supply of Physicians

In assessing Virginia's need for physicians, it is helpful to review some trends in the nation as well as those in the state. Table 4 shows some of these trends in terms of physician/population ratios for selected years.

TABLE 4

THE RATIO OF PHYSICIANS PER 100,000 POPULATION FOR THE UNITED STATES AND VIRGINIA FOR SELECTED YEARS: 1955-62 [1]

Year	United States		Virginia	
	Total Physicians	Non-Federal Physicians	Total Physicians	Non-Federal Physicians
1955	132.1	116.9	n.a.	93.4
1957	132.4	116.5	n.a.	90.7
1959	133.3	117.6	111.6	94.1
1960	135.0	118.9	117.1	94.3
1962	138.3	121.2	119.3	97.5

Two general observations may be drawn from these data: First, Virginia ranks well below the national ratio of physicians per 100,000 population. Secondly, the trend for the nation as a whole, and for Virginia as well, has been fairly stable with some increases shown in recent years. Virginia has maintained its relative position as to the supply of physicians for its population whether one includes all physicians or just the active, non-Federal physicians. The increases may be due to such factors as: including a growing number of foreign medical graduates; including some former osteopaths (O.D.'s) who are now classified as M.D.'s in the national data; and retirement postponement. The thirty-three O.D.'s in Virginia are not included in the physician ratios.

In 1962, Virginia had a total of 4,921 physicians, including 646 Federal employees and 253 retired physicians. This left a total of 4,022 active, non-Federal physicians in practice. By 1963, the total number of active non-Federal physicians in Virginia was 4,139. The number of retired physicians has tended to remain fairly stable over the last few years, but the number of Federal physicians has tended to increase markedly in recent years. Table 1 in the Appendix shows physician data over a period of several years.

The number of physicians licensed to practice in Virginia has grown from 2,642 in 1950 to 4,415 in 1962, or an increase of 67 per cent over the 12-year period. Some physicians licensed in Virginia may live and practice in adjacent or distant states, while some Federal physicians may not be licensed by the State. In 1962, there were 357 licensed physicians in Virginia who were graduates of foreign medical schools. Many of these physicians were serving as housestaff in hospitals. At least 41 physicians were lost by death in 1962.[2] In reviewing trends revealed

[1] AMA data provided to U. S. Public Health Service and compiled by Maryland Pennell.

[2] Dr. R. M. Cox, Secretary-Treasurer of the Virginia Board of Medical Examiners, June, 1963.

from both licensing data and from AMA registration data, it would appear that Virginia is holding its own and gradually increasing its total supply of physicians in relation to its population. The physician/population ratio in Virginia, however, continues to remain about 18 per cent below that of the U. S. ratio.

Distribution of Physicians in Virginia

By Geographical Areas.—While the State as a whole shows some improvement in the number of physicians serving the population, there is wide variation in the number of physicians serving from one area to another. The active (including Federal employees) physician/population ratios by county in Virginia for 1960 ranged from a low of zero in King & Queen County (no physician is registered as living in the County although a physician does practice there) to a high of 503 for Albemarle County. Other counties (including adjacent cities) ranging well above the statewide ratio of 111 include: Henrico (244), Roanoke (171), James City (169), Frederick (148), Arlington (138), Norfolk (136), and Campbell (129). A complete listing of all counties is shown in Table 2 in the Appendix.

The wide variations in physician/population ratios by counties tends to emphasize the observation that Virginia's chief problem in terms of physician supply may be a problem of maldistribution. Many small communities and rural areas do not have the services of a regular physician. Table 3 in the Appendix shows similar data for 1960 by groups of counties or sub-regions of the state. In addition to the physician/population (which includes all active Federal and non-Federal physicians) ratio, the table shows the percentage of population change from 1950 to 1960 and the percentage of the total state population that is constituted by that area. These data show a range from a low of 32.9 in the Blue-Ridge-Piedmont area (Franklin, Floyd and Patrick Counties) to a high in the Northwestern area (including Albemarle County).

By Type of Practice.—The American Medical Association and the U. S. Public Health Service have reported the distribution of physicians by state, county and type of service for several years. Table 5 shows the distribution of non-Federal Virginia physicians for 1957 and 1963. The number and proportion of physicians in private practice in Virginia tends to remain about the same (70 per cent), while the number and proportion of physicians who serve as general practitioners or part-time specialists tends to decrease each year. When compared with the national picture, Virginia has a similar proportion of its physicians in general practice (30 per cent). Although the number and percentage of specialists is increasing each year in Virginia, there is a lower percentage (40 per cent) in the state than in the nation (50 per cent). In spite of the growing number of specialists, there are some shortages of specialists reported by the Virginia Council on Health and Medical Care. These include: internists, ophthalmologists, orthopedists, otolaryngologists, pediatricians and general surgeons. Again, the shortage may be a matter of maldistribution. The largest shortage reported is that of the general practitioner or family physician.

By Age.—The median age of Virginia physicians in 1959 was 43.9 years. This included all non-Federal physicians, both active and retired.[1] Of the total number (3,910) accounted for that year, 211 physicians were

[1] *Health Manpower Source Book*, Section 10, p. 25.

retired; 233 were reported as being 75 years of age or older; 295 were under 30 years; and 1,533 were under 40 years of age. In 1959, the average age of all U. S. physicians was 44.9 years. Median ages varied somewhat by section of the country: Northeast—46.9; West—43.5; North Central—44.8; and South—43.4. It may be observed that Virginia's physicians are slightly younger than the national average, and that the average physician in Virginia has approximately 25 to 30 years of productive service ahead of him.

TABLE 5

DISTRIBUTION OF NON-FEDERAL PHYSICIANS IN VIRGINIA BY TYPE OF PRACTICE FOR 1957 and 1963

Type of Practice	1957 [1] No.	1957 [1] %	1963 [2] No.	1963 [2] %
In Private Practice				
General practice and part-time specialist	1,490	40.2	1,314	29.8
Full-time specialist	1,129	30.4	1,743	39.6
Sub-totals	2,619	70.6	3,057	69.4
Not in Private Practice				
Interns	359	9.7	152	3.5
Residents			416	9.4
Other full-time hosp. staff	362	9.8	182	4.1
Full-time med. school fac.	155	4.2	135	3.1
Administrative medicine			33	.7
Preventive & lab. medicine			140	3.2
Research			24	.6
Retired or not in practice	211	5.7	266	6.0
Sub-totals	1,087	29.4	1,348	30.6
Grand Totals	3,706	100.0	4,405	100.0

Training of Virginia Physicians

Of the 3,910 physicians practicing in Virginia in 1959, 3,675 (94.0 per cent) had graduated from U. S. medical schools, although 70 of these physicians had graduated from schools that no longer exist. The remaining 235 had graduated from foreign schools—44 from Canadian schools and 191 from a number of other countries.[3]

Of the 3,675 Virginia physicians graduating from U. S. schools, 2,107 (57.3 per cent) graduated from the two state medical schools; 796 (21.7 per cent) came from schools in adjacent states; and 772 (21.0 per cent) came from schools in more distant states. A total of 74 U. S. medical schools contributed one or more physicians to Virginia's 1959 register of

[1] *American Medical Directory*, 20th Ed., 1958.
[2] *A.M.A. Report Service*, Vol. 16, No. 12, April, 1963.
[3] *Health Manpower Source Book*, Section 11, p. 4.

physicians. The following medical schools, by order of rank, graduated 22 or more physicians that were practicing in Virginia in 1959:

Medical College of Virginia	1,340	University of Louisville	42
University of Virginia	771	Harvard Medical School	31
University of Maryland	124	Washington University	29
Geo. Washington University	102	Columbia University	29
Howard University	92	Tulane University	28
Georgetown University	90	Emory University	27
Johns Hopkins University	88	Medical College of S. Car.	27
Duke University	68	Vanderbilt University	27
University of Pennsylvania	60	Temple University	26
Meharry Medical College	57	New York University	24
University of Tennessee	51	University of Cincinnati	24
Jefferson Medical College	47	Bowman Gray (Wake Forest)	22

Graduates of U. S. medical schools tend to become widely disseminated. Only 46.7 per cent (compared with 41.3 per cent for Virginia) of all medical school graduates remained in the state in which they attended medical school. The low figure for Virginia may be due partially to the fact that there are two schools of long standing in the state, while some states still do not have any medical school.

Graduates of Virginia Medical Schools

Of the 5,098 living graduates of the two Virginia medical schools in 1959, 2,107 (41.3 per cent) were practicing in Virginia; 1,269 (24.9 per cent) were practicing in adjacent states; and 1,722 (33.8 per cent) were practicing in other states.[1]

Although only 41.3 per cent of Virginia's medical school graduates remained in Virginia, 57.3 per cent of the physicians in Virginia were graduates of the two medical schools. In the nation as a whole, medical schools retained 46.7 per cent of their graduates in state and 53.3 per cent of their graduates left the state to practice.

Problem of Declining Graduates.—While Virginia medical schools have graduated more than their proportion of physicians in years past, the problem of this moment is that of declining numbers of graduates. This trend is the more serious in the light of increasing demands for medical care at the national level and particularly in some sections of Virginia.

Table 6 shows the actual number of graduates and the adjusted number of graduates from Virginia medical schools for selected years from 1955-62. More complete figures by year since 1950 are shown in Appendix Tables 4 and 5.

TABLE 6

THE NUMBER OF GRADUATES OF VIRGINIA MEDICAL SCHOOLS FOR SELECTED YEARS: 1955-63

Year	MCV Graduates	(Contract Students)*	Adjusted MCV Total	U. Va.	Total
1955	100	(-25)	75	63	138
1957	95	(-23)	72	75	147
1959	94	(-17)	77	68	145
1960	95	(-24)	71	65	136
1962	88	(-11)	77	55	132
1963	67	(-0)	67	65	132

* Contract students from W. Virginia are excluded from adjusted totals.

[1] *Health Manpower Source Book*, Section 11, p. 6.

The number of MCV graduates since 1951 has ranged from a high of 102 (1952) to a low of 67 (1963). As many as 25 graduates, however, have attended MCV under contract arrangements with the University of West Virginia until the latter school became four-year in 1961.

Service Patterns for Medical Graduates.—The U. S. Public Health Service, reporting on medical school graduates between 1925 and 1950, indicated the following patterns:[1]

1. Nearly 81 per cent of all U. S. graduates went into private practice, with 8 per cent in hospital service, 9 per cent in other medical practice and 2 per cent not in practice. Corresponding percentages for the University of Virginia graduates were: 76, 12, 10 and 2, respectively. Figures for MCV were: 79, 10, 9 and 2, respectively.
2. About 59 per cent of all U. S. medical graduates were in some full-time speciality. Percentages for the University and MCV were 69 and 54 per cent, respectively.
3. The percentages of graduates practicing in the same state as that of the medical school training for the University and MCV were 38 and 42, respectively (compared with a 46.7 national percentage).

A recent survey of Medical College of Virginia graduates since 1951 indicates that fewer graduates of MCV go into specialties than is the case with the graduates in the nation at large. In 1960, approximately 70 per cent of American medical school graduates chose some type of full-time specialty for practice, while that same year 56 per cent of MCV's graduates chose specialties. Thus, at a time when general practitioners are in demand, graduates of MCV appear to be showing less interest in specialties than is the case in the nation at large. Similar data for the University medical school are not available.

Graduate Medical Education

Although the total number of physicians in the nation (excluding the foreign medical graduates) is directly dependent upon the number of physicians graduated from U. S. medical schools, recent studies have shown that the location and quality of graduate (often referred to as postgraduate) medical education programs (internships and residencies) may be very important in determining where physicians locate their practices. Weiskotten, et al,[2] in a study of medical graduates of 1945 and 1950, found that the highest proportion (62.8 per cent in 1950) were practicing in the same state as that in which they received their residency training. The relative importance of four factors is shown in Table 7.

The physician's original state of residence remains the second most important factor, and the location of the medical college in which the physician received his training is the least important of these four factors. Since places of residency and internship training are important in the determination of the total supply of physicians in a state, these graduate medical education programs in the hospitals of Virginia should be reviewed carefully. It would be possible for Virginia to attract a sufficient supply of physicians from other states just by developing more and better intern and residency programs.

[1] *Ibid,* pp. 11-16.

[2] Herman G. Weiskotten, et al, "Trends in Medical Practice—An Analysis of the Distribution and Characteristics of Medical College Graduates, 1915-1950," *The Journal of Medical Education,* Vol. 35, No. 12, December, 1960, pp. 1071-1121.

TABLE 7

AN ANALYSIS OF FOUR FACTORS TENDING TO GOVERN LOCATION OF PRACTICE AFTER RESIDENCY TRAINING

Graduates With Residency Training Practicing in Same State As:	Percentage of Graduates by Year of Graduation	
	1945	1950
Residency Training	58.8	62.8
Residence Prior to Med. School	54.6	52.5
Internship	42.3	47.5
Medical College Training	42.4	42.3

Internship and Residency Programs.—Of the total number (123) licensed hospitals in operation in Virginia in 1962-63, 19 hospitals had internship programs and 29 had residency programs, offering a combined total of 876 house-staff positions. Of this figure, 605 positions were filled as of September 1, 1962. As many as 110 interns and residents were foreign medical graduates.

In 1961-62, 262 internships were offered and 163, or 62 per cent of these were filled as of September 1, 1961. This percentage compares with 68 percent of the filled positions across the nation. It might be noted, however, that while Virginia graduated 163 medical students (including 21 contract students from West Virginia, the same number of internships were filled in the state. This indicates that Virginia can draw its fair share of interns in competition with other states in proportion to the number of medical school graduates it produces.

In 1961-62, there were 571 residency positions offered in 28 Virginia hospitals and 468, or 82 per cent, were filled as of September 1, 1961. The percentage of filled residencies for the nation was 84 per cent. Included in the 1961-62 figures were 17 interns and 112 residents from other countries. Although Virginia fills residency vacancies about as well as the nation at large, in relationship to its population, the number of approved residencies offered in Virginia is less than 70 per cent of the national average. This means that Virginia is not getting its share of residents in hospitals. There is a serious shortage of housestaff in many Virginia hospitals that may become critical in future years, unless adequate support is found for hospitals to provide a sufficient number of good positions. Some hospitals have employed physicians to serve in hospitals on a full-time basis, while other hospitals rely on physicians in private practice to provide more and more regular and emergency services.

Foreign Medical Graduates

From 1957 to 1962 there were 794 foreign medical graduates licensed to practice medicine in Virginia. Of this total, 205 were still practicing in January, 1962. Virginia ranks fourth among the states, in terms of the total number of foreign medical graduates licensed since 1946. New York licensed 3,960; Illinois—2,038; California—1,241; and Virginia—1,227. In recent years the proportion of foreign medical graduates to U. S. medical graduates licensed for practice has tended to increase both in the U. S. and in Virginia. Table 8 shows a comparison of licentiates and the percentage of foreign medical graduates involved.

Many hospitals in Virginia are dependent upon the interns and residents that have had their medical training in other countries. Thus, while

Virginia benefits from licensing and providing additional training to the foreign physicians in exchange for services performed, it has become a matter of concern as to whether Virginia should become so dependent upon this source of supply for physicians.

TABLE 8

A COMPARISON OF UNITED STATES AND VIRGINIA LICENTIATES IN RELATION TO THE NUMBER AND PERCENTAGE OF FOREIGN LICENTIATES: 1957-60

Year	United States Licentiates Added to Profession	United States Foreign Licentiates	United States Per Cent	Virginia Added to Profession	Virginia Foreign Licentiates	Virginia Per Cent
1957	7,455	1,014	13.6	252	92	36.5
1958	7,809	1,166	14.9	246	97	39.4
1959	8,269	1,626	19.7	275	123	44.7
1960	8,030	1,419	17.7	397	250	62.9

Sources: U. S. data taken from *Datagram*, AAMC, Vol. 3, No. 11, May, 1962. Virginia data supplied by Dr. R. M. Cox, Sec. Bd. Medical Examiners.

Federal and State Physicians

At least 646 Federal employees were included in the 4,921 physicians in Virginia in 1962. About 50 of these were employed by the U. S. Public Health Service; 135 were employed by the Veteran's Administration; and most of the rest were employed by the armed services. Since these physicians serve a significant segment of Virginia's population through military establishments and special services, it is reasonable to include them in assessing the total supply of physicians in the state. Federal employees are found particularly in the Hampton Roads area and in Northern Virginia, near Washington, D. C.

Virginia's State Board of Health employs approximately 95 full-time state and local health officers, and more than 2,000 of the physicians in the state serve part-time in such activities as school clinics and medical examinations. The Commonwealth of Virginia is divided into 40 health districts that cover the entire state. Through various programs of preventive medicine, rehabilitation and special services, the State provides a broad and effective coverage for the general health and welfare of its citizens. This program could not function, however, without the assistance of many physicians in the state. The state also employs several hundred physicians through its two medical schools. These employees also serve through teaching, research and patient care and, hence, should be included in any measure of Virginia's supply of physicians.

Chapter 3

VIRGINIA'S MEDICAL SCHOOLS

General Background

Virginia now provides General Fund tax support for two of the 42 public medical schools in the United States. None of the 45 private medical schools in this country are located in Virginia. There are, however, several public and private medical schools in adjacent states and in the District of Columbia.

University of Virginia Medical School.—The Medical School at the University of Virginia at Charlottesville was established in 1824 and opened in 1825 as one of the eight original schools of the University. It was one of the first schools to be established in the South and among the first in the nation.

The first students—four in number—were graduated in July, 1828. The degree of Doctor of Medicine was authorized in 1831, for one year of study. Thereafter, except in 1865, degrees were granted annually until 1892 for one year of study; from 1892 to 1895 for two years; from 1896 to 1898 for three years; and from 1899 to the present for four years of study. With the curriculum expanded to four years, with the Hospital providing clinical facilities (1901), and the establishment of collegiate entrance requirements (1907), the modern period of the school began.

Medical College of Virginia.—The Medical School of the Medical College of Virginia, now located in Richmond, was first organized as a department of Hampden-Sydney College in 1838. From 1854 to 1860 it was conducted as an independent institution, and in the latter year, it became a State institution. It was enlarged in 1913 by consolidation with the University College of Medicine, founded by Dr. Hunter H. McGuire in 1893, and with Memorial Hospital.

From the first, medicine and pharmacy were taught; then in 1878, pharmacy emerged as a separate course. During the last decade of the last century, dentistry and pharmacy were made separate schools followed by nursing during the first quarter of the present century. Teaching medicine at the bedside with patients housed within the institution has been a practice since the early days of the institution. In 1861, the first separately organized hospital was opened, and, in 1867, an out-patient department was organized. Programs in dietetics (1930), x-ray technology (1935), physical therapy (1944), hospital administration (1949), medical technology (1952), and graduate studies (1957) have been added to make the Medical College of Virginia a complex health center. As such an institution, in 1959, the College became the first professional school of its kind to be accepted into membership of the Southern Association of Colleges and Schools. The present study is concerned only with the Medical School in the College.

Both the Medical School of the University of Virginia and the Medical School of the Medical College of Virginia are accredited by the Council on Medical Education and Hospitals of the American Medical Association and both are members of the American Association of Medical Colleges.

Enrollment Trends

U. S. Medical Schools.—Enrollments in all medical schools are shown for selected years in Table 3. The total enrollment of 31,078 medical students for 1961-62 represented an increase of 790 over the previous year or

the largest increase for any single year since 1951. Over one-half of this increase was accounted for by the four classes of students added through approval of the California College of Medicine (355) and the incoming first-year class at Kentucky (61). The remaining 355 students represented modest increases in a number of schools throughout the country.

An increase of 413 students was reported for 1962-63 over the previous year. In all, 51 schools reported modest increases, while 35 schools reported decreases. The average enrollment for the 83 developed four-year schools was 374. Four schools, in addition to Kentucky, showed enrollments of less than 200. Sixteen schools showed total enrollments of more than 500 students and 6 reported enrollments in excess of 600.[1]

Virginia Medical School Enrollments.—Undergraduate four-year student enrollments in the two Virginia medical schools over a three year period are shown in Table 9. The average enrollment in the University School of Medicine over the last 13 years has been 285. With a normal capacity of 304 for the four classes, the highest enrollment recorded was 297 (in 1956-57). The largest number of Virginia students enrolled at any one time was 242 (1952-53). In 1962-63, there were 179 Virginia students and 106 non-Virginia students enrolled. Enrollment in both medical schools by resident and non-resident students for selected years from 1950 to 1962 is shown in Table 10.

TABLE 9

ENROLLMENT BY CLASS AND GRADUATES IN VIRGINIA MEDICAL SCHOOLS: 1960-62

	University of Virginia			Medical College of Virginia		
Class	1960-61	1961-62	1962-63	1960-61	1961-62	1962-63
First year	76	76	77	85	83	86
Second year	70	68	77	64	77	78
Third year	61	68	69	92	70	77
Fourth year	74	55	62	89	88	67
Totals	281	267	285	330	318	308
Graduates	74	55	65	89	88	67

TABLE 10

ENROLLMENT IN VIRGINIA MEDICAL SCHOOLS BY RESIDENT AND NON-RESIDENT STUDENTS, FOR SELECTED YEARS, 1950 TO 1962

	University of Virginia			Medical College of Virginia		
Year	Virginia Resident	Non-Resident	Total	Virginia Resident	Non-Resident	Total
1950-51.....	223	64	287	266	55	
1953-54.....	235	47	282	282	41	
1956-57.....	217	80	297	272	49	
1959-60.....	193	94	287	229	76	
1960-61.....	184	97	281	217	79	
1961-62.....	171	96	267	221	85	
1962-63.....	179	106	285	220	88	

* Figures in parentheses represent West Virginia contract students.

[1] *JAMA*, Vol. 186, No. 7, 1963, p. 661.

Enrollment at the Medical College of Virginia has ranged from a high of 372 (1953-54) to a low of 308 (1962-63) with an average of 352 students over the last 13 years. During the past year there were 220 Virginia resident students and 88 out-of-state students. The expansion of the West Virginia University Medical School from a two-year program to a four-year program has reduced the total number of students at the Medical College. Prior to 1961, as many as 50 students from W. Virginia were enrolled in the last two years of medical training on a contract basis.

Modern medical schools generally have more students than those enrolled in the undergraduate medical curriculum. Graduate students, interns and residents, fellows and other students in health-related programs often make up full-time equivalent student enrollments as large as the undergraduate medical school enrollment. Table 11 shows these enrollments for the two Virginia medical schools over a three year period.

TABLE 11

NUMBER AND TYPES OF STUDENTS IN TRAINING IN VIRGINIA MEDICAL SCHOOLS 1960-63

Student	University of Virginia			Medical College of Virginia		
Classification	1960-61	1961-62	1962-63	1960-61	1961-62	1962-63
Full-time medical students	281	267	285	330	318	308
Interns	34	34	32	53	40	42
Residents	131	116	121	143	149	153
Graduate students	2	4	5	38	45	51
Clinical Fellows	23	31	28	**	**	20
Other * (FTE)	82	91	92	234	242	225
Totals	553	543	563	798	794	788

* Includes full-time equivalent students in dentistry, pharmacy, nursing, and other programs who are taking courses in medicine.

** Included with the total for "residents."

Selection and Admission of Students

U. S. Medical Schools.—In 1961-62, fewer students applied to U. S. medical schools than for any year since 1947; that year also marked the lowest point in a downward trend over a six-year period.[1] In 1962-63, however, there was an increase of 1,466 applicants over the previous year.[2] Of the 15,847 applicants in 1962, only 8,959 (or 277 more than the previous year) were accepted and enrolled in U. S. medical schools. Thus, about one out of 1.8 applicants was accepted. Table 12 shows a summary of application activity in U. S. medical schools for selected years from 1948 to 1962.

The decrease in applicants up to 1961 had caused predictions that new medical schools would have difficulties in filling classes with qualified students. Since there are still more applicants than there are students accepted and enrolled, the total number of applicants is not as important as having an adequate number of qualified applicants. In general, the number of qualified students is considered to be adequate. The increase

[1] *The Journal of Medical Education*, Vol. 37, No. 11, November, 962, p. 1203.
[2] *Datagram*, AAMC, Vol. 5, No. 3, September, 1963.

of 10.2 per cent in applicants for 1962 and reports of additional increases for 1963 have caused more optimism regarding qualified medical students for the future.

TABLE 12

SUMMARY OF APPLICATION ACTIVITY IN U. S. MEDICAL SCHOOLS FOR SELECTED YEARS: 1948-62 [1]

Year	Number of Applicants	Total Applications	Per Individual	Accepted Applicants	Ratio of Applicants to Accepted
1948	24,242	81,662	3.4	6,973	3.48
1951	19,920	70,678	3.5	7,663	2.60
1954	14,538	45,568	3.3	7,878	1.85
1957	15,791	60,951	3.9	8,302	1.90
1960	14,397	54,662	3.8	8,560	1.68
1961	14,381	54,700	3.8	8,682	1.66
1962	15,847	59,054	3.7	8,959	1.77

Some reasons advanced to account for the decreasing number of applicants up to 1961 include: (1) the high cost of medical education as compared with other professional and graduate fields; (2) the lack of scholarships and fellowships in medicine as compared with other fields; (3) the length of the training period required for medicine; (4) the apparent loss of prestige of the medical profession as compared with some of the newer scientific fields; and (5) the aggressive recruiting activities of certain competitive professions.[2]

The quality of students entering medical schools appears to improve with each succeeding year as measured by standardized tests. The Medical College Admission Test (MCAT) has been taken in recent years by nearly every student admitted to medical school.[3] Table 13 shows the mean MCAT scores for accepted students in all U. S. medical schools for selected years from 1952 to 1963. Scores in all sections of the test have shown improvement.

TABLE 13

MEAN MEDICAL COLLEGE ADMISSION TEST SCORES OF ACCEPTED APPLICANTS DURING SELECTED YEARS: 1952-63 [4]

Year	Verbal Ability	Quantitive Ability	Understanding Society	Science	Number Taking MCAT	Total Accepted Applicants
1952-53	522	526	519	525	7,346	7,778
1955-56	524	528	527	522	7,688	7,969
1958-59	527	532	520	523	8,301	8,366
1961-62	533	538	522	537	8,633	8,682
1962-63	544	537	541	545	8,920	8,959

[1] *J. Med. Ed.*, Vol. 37, No. 11, Nov., 1962, p. 1203. *JAMA*, Vol. 182, No. 7, Nov., 1962, p. 216

[2] *JAMA*, Vol. 182, No. 7, November, 1962, p. 167.

[3] *Ibid.*

[4] *Datagrams*, AAMC, Vol. 4, No. 4 (October, 1962).

The average applicant to medical school submits almost four applications; therefore, medical schools must screen a large number of potential medical students in order to accept and enroll the best students who apply. Also, if a student is acceptable to all of the schools to which he has applied, he can take his choice of where to attend school. A large number of students, apparently, are not acceptable in any of the U. S. medical schools.

Admission to Virginia Medical Schools.—Both Virginia medical schools have received an increasing number of applications in recent years, in spite of the national decrease. More and more applications have come from non-Virginia residents. No quota system has been used in selecting students. Both schools seek to select and accept the qualified Virginia applicants first and then supplement this group with the best qualified out-of-state applicants to fill entering classes. In recent years it would not have been possible to fill all 160 places available in the combined first-year classes with qualified Virginia students. During this time less than 153 qualified Virginia students have entered medical schools anywhere. In the final selection and admission of students in both Virginia schools, however, there is a balance in favor of selecting Virginia students.

University of Virginia.—In 1962-63, the University Medical School received 600 applications (150 Virginia applicants and 450 out-of-state applicants) from which 41 Virginians and 35 out-of-state applicants were accepted and enrolled. It would appear that the University was able to fill its normal entering class of 76 places with well-qualified Virginia students and even better qualified out-of-state students. Mean MCAT scores made by the 1960 entering class at the University Medical School were: Verbal—525; Quantitive—545; General—535; and Science—525.

Applicants to the University Medical School must show evidence of intellectual ability and achievement and suitable personal qualities. Preference is given to students who have completed four years of college; however, applicants are considered who have completed three years of college. Table 14 shows the number of applicants and the number of students enrolled in the entering class for selected years from 1950 to 1963.

TABLE 14

NUMBER OF APPLICANTS AND FIRST YEAR ENROLLMENTS AT THE UNIVERSITY OF VIRGINIA SCHOOL OF MEDICINE FOR SELECTED YEARS: 1950-62

Year	Total Applicants	Total Applicants Enrolled	Virginia Residents		Non-Residents	
			Applicants	Applicants Enrolled	Applicants	Applicants Enrolled
1950-51.....	1,025	72	249	63	776	9
1953-54.....	520	76	158	58	362	18
1956-57.....	712	76	172	54	540	22
1959-60.....	543	76	160	50	383	26
1961-62.....	517	76	133	40	384	36
1962-63.....	600	76	150	41	450	35

Medical College of Virginia.—The Medical College School of Medicine received 395 applications for the 84 first-year vacancies in 1962-63; 152 of these came from Virginia residents and 243 came from out-of-state

residents. From this group, MCV accepted and enrolled 58 Virginians and 26 non-Virginians. From the ratio of applicants to those accepted and enrolled, it appears that MCV was able to fill its entering class with qualified students. The mean MCAT scores for the 1963 entering class were: Verbal—505; Quantitive—527; General—532; and Science—517. These scores represent some improvement over previous years in terms of the quality of students accepted and enrolled.

The Medical College also gives preference to Virginians who are qualified. Applicants must possess abilities and qualities that will: (1) allow them to successfully complete the requirements for the M.D. degree; (2) contribute most effectively to the health and welfare of society; and (3) favorably reflect the ideals and objectives of the Medical College both as students and as graduates. Preference is given to those who have completed four years of college, although applicants will be considered after completing a minimum of three years of college work satisfactorily. Table 15 shows the number of applicants and first-year enrollments in the Medical College for selected years from 1950 to 1962.

TABLE 15

NUMBER OF APPLICANTS AND FIRST YEAR ENROLLMENTS AT THE MEDICAL COLLEGE OF VIRGINIA SCHOOL OF MEDICINE FOR SELECTED YEARS: 1950-62

Year	Total Applicants	Total Applicants Enrolled	Virginia Residents		Non-Residents	
			Applicants	Applicants Enrolled	Applicants	Applicants Enrolled
1950-51.....	561	111	252	72	309	12
1953-54.....	341	108	179	73	162	11
1956-57.....	336	131		66		18
1959-60.....	407	136		55		29
1961-62.....	338	123	156	66	182	17
1962-63.....	395	124	152	58	243	26

Origins of Students in Virginia Schools.—The geographical origins of entering students in Virginia's medical schools in 1961-62 are shown in Table 16.

TABLE 16

GEOGRAPHICAL ORIGINS OF MEDICAL STUDENTS IN THE ENTERING CLASS AT THE UNIVERSITY AND MCV FOR 1961-62 [1]

State of Origin	Number in U. Va.	MCV	State of Origin	Number in U. Va.	MCV
California	1		New York	9	2
District of Columbia	1		North Carolina	1	2
Florida	2		Ohio	1	2
Georgia		1	Pennsylvania	1	2
Illinois	1		South Carolina		3
Kentucky	1	1	Tennessee	..	1
Louisiana	1		Texas	1	
Maryland	3	1	VIRGINIA	40	66
Massachusetts	1		West Virginia	1	2
Michigan	1		Foreign	1	1
Mississippi	1				
New Jersey	8	2	Totals	76	86

[1] *JAMA*, Vol. 182, No. 7, November, 1962, p. 168.

Virginia Students Entering Medical Schools.—The number of Virginia students entering medical schools each year over the last nine years has dropped from 161 to 153 with some fluctuation from year to year. The smallest number of Virginia students entering medical schools was 134 in 1959. Table 17 shows the number that entered each Virginia medical school and the number going out-of-state for medical training. Very few Virginia students go out-of-state to public medical schools in other states. Most of them go to private schools in the East. Table 17 also shows the declining ratio of medical students from Virginia to the population for Virginia as compared with the ratio for all first year medical students to the total U. S. population.

TABLE 17

VIRGINIA STUDENTS ENTERING MEDICAL SCHOOLS: 1954 to 1962 [1]

Year	Number of Students				No. 1st Yr. Students per 100,000 population	
	Total Students	Va. Schools		Out-of-State	Virginia	U. S.
		MCV	U. Va.			
1954-55	161	74	50	37	4.7	4.6
1955-56	150	69	52	29	4.2	4.6
1956-57	149	66	54	29	4.3	4.7
1957-58	161	69	49	43	4.4	4.7
1958-59	157	68	49	40	4.2	4.6
1959-60	134	54	48	32	3.6	4.7
1960-61	146	62	51	33	3.6	4.6
1961-62	152	65	40	47	3.7	4.6
1962-63	153	60	45	48	3.7	4.6

[1] *JAMA*, Medical Education Supplements for the years 1955 through 1963.

The problem of having so few qualified students from Virginia seeking training in medicine in-state or out-of-state is a reflection of more basic problems in Virginia's educational system. First of all, Virginia ranks very low in the South and in the U. S. in the percentage of 18 year-olds that finish high school. Then, only 23 per cent of Virginia's college-age youth are enrolled in college (as compared with a national percentage of about 39). In 1961, Virginia ranked 41st among all states in the proportion of young people entering medical schools. This represented a drop from a rank of 36 in 1958. If Virginia hopes to improve its production of physicians from among the ranks of Virginia students, there will need to be many improvements in developing an adequate supply of qualified applicants from Virginia's educational system. In addition to providing more opportunities for young people to attend college in Virginia, additional efforts will need to be put into counseling students to consider medicine and other health fields as worthwhile careers.

Student Attrition.—It is increasingly important to select able students for medical training. The scarcity of openings in first year classes, the high cost of training, both for the student and the school, and the academic and physical requirements make it imperative that each medical school select only the most qualified students for training. After selecting these students, it is also necessary to retain these students by providing every opportunity for the student to progress with his class and complete his training.

Each year a certain number of students drop out of medical schools for a variety of reasons. Some cannot continue to meet academic standards. Others may not be able to find sufficient financial support, and still others may lose interest or have personal problems that prevent them from continuing. A national study of student attrition in medical schools over a four year period revealed that enrollments decreased 7.7 per cent, 3.3 per cent, 1.5 per cent, and .5 per cent for each of the four years, respectively. Of the 1,058 students that dropped out over a four year period, 60 per cent were let go for poor academic standing. Table 18 presents the findings of this study.

TABLE 18

STUDENT ATTRITION IN 87 MEDICAL SCHOOLS IN THE U. S.: 1958 to 1962[1]

Year	Composite Enrollment	Withdrawal or Dismissal: Poor Academic Standing	Withdrawal or Dismissal: Other Reasons	Withdrawal or Dismissal: Total	Per Cent Enrollment Lost
First	8,483	397	251	648	7.7
Second	7,823	149	112	261	3.3
Third	7,528	47	68	115	1.5
Fourth	7,244	10	24	34	.5

In a similar study, MCV reported an attrition rate of 13.4 for first year students over a four year period. The following years showed drop out rates of 1.0, 1.3 and 0.0, respectively. The large drop out rate for the first year was due largely to one particular class that had great difficulty in keeping up with the academic work. Most drop outs were for academic reasons, although 17 of the 51 were for "other" reasons. Table 19 shows the aggregate student attrition rate over a four year period at MCV.

TABLE 19

STUDENT ATTRITION FOR FOUR YEARS, MEDICAL COLLEGE OF VIRGINIA: 1959-63

Year	Composite Enrollment	Withdrawal or Dismissal: Poor Academic Standing	Withdrawal or Dismissal: Other Reasons	Withdrawal or Dismissal: Total	Per Cent Enrollment Lost
First	335	30	13	45	13.4
Second	294	1	2	3	1.0
Third	339	2	2	4	1.2
Fourth	339	0	0	0	0.0

Table 20 shows the results of a similar study for the University of Virginia Medical School, where a total of 43 students dropped out during a four year period. The drop out rates tended to follow the national pattern with 8.1, 3.8, 2.6, and 0.0 percentages for the four years, respectively.

[1] *JAMA*, Vol. 182, No. 7, November, 1962, p. 168.

TABLE 20

STUDENT ATTRITION FOR FOUR YEARS, UNIVERSITY OF VIRGINIA: 1959-63

Year	Composite Enrollment	Withdrawal or Dismissal: Poor Academic Standing	Withdrawal or Dismissal: Other Reasons	Withdrawal or Dismissal: Total	Per Cent Enrollment Lost
First	308	19	6	25	8.1
Second	287	5	6	11	3.8
Third	274	2	5	7	2.6
Fourth	256	0	0	0	0.0

Student failure in medical school is costly and wasteful. As many as 10 per cent of the students who start do not finish their training. And yet, many students who do not appear to be good academic risks at first can become good doctors. Thus, the medical schools are faced constantly with the decision of choosing the best qualified students and also giving some border-line students an opportunity to qualify as an M.D.

Student Costs for Medical Education.

Some students who are able to start medical training have to drop out because of financial difficulties. Many able students, however, never get to medical school because they do not have the funds and thus never attempt to get the training. Medical education is the most costly type of professional training in the nation today. The length of time required to become a physician is very great in comparison with most other fields of study. Following four years of college, there are four years of medical school, one year of internship, two to four years of residency, and for some males of draft age, there may even be two years of military service prior to the time the physician enters practice. For much of this training period, the student must pay a fairly high fee, and for a period of 10 to 12 years, he earns very little income. For the average unmarried student to complete four years of medical school it costs about $10,000. Tuition and fees alone average about $1,000 per year as compared with an average of about $450 per year for other types of graduate and professional study.[1]

A recent follow-up study of the college graduating class of 1961,[2] reports that: (1) 33 per cent of a sample of first-year medical students in 1961-62 received some type of scholarship stipend, compared with 67 per cent of the students in the biological sciences and 70 per cent of the students in the physical sciences; (2) medical students who did receive financial aid usually received smaller amounts (median of less than $750) than did students in other graduate fields (median of over $2,000).

Expenses for tuition, room, board and supplies in medical schools range, on the average, from $1,500 for state residents in public schools to $2,335 for students in private institutions per year. The minimum cost to a Virginia student per year at the University Medical School is $1,982; at MCV the cost is $1,931. A summary of costs for Virginia medical schools and average costs for other U. S. medical schools is shown in Table 21.

[1] *J. Med. Ed.*, July, 1961.

[2] National Opinion Research Center, mimeographed report, April, 1963.

TABLE 21

MINIMUM EDUCATIONAL EXPENSES AT MEDICAL SCHOOLS IN THE UNITED STATES AND VIRGINIA: 1962-63 *

School	Total	Tuition and Fees	Room and Board	Books and Supplies
United States:				
Public Schools (median)				
Residents	$1,500	$ 550	$ 800	$150
Non-Residents	1,895	945	800	150
Private Schools	2,335	1,285	900	150
Virginia Schools:				
University of Va.				
Residents	1,982	597	1,135	250
Non-Residents	2,497	1,112	1,135	250
Medical College				
Residents	1,931	725	981	225
Non-Residents	2,281	1,075	981	225

* Excludes living expenses other than room and board. Also excludes cost of renting or purchasing microscopes. Data from the AAMC bulletin on "Admission Requirements of American Colleges, 1962-63."

Virginia Scholarship Program.—Virginia is one of thirteen states that has a scholarship program for medical students who agree to serve in some rural community or State position. Approximately 35 students each year are provided with $1,000 scholarships for a year-for-year service in: (1) a rural area acceptable to the State Department of Health, (2) a State mental hospital, (3) the State Public Health Service, or (4) under exceptional circumstances, the student may repay the loan plus interest. This program, administered by the State Department of Health, generally makes 20 such scholarships available to MCV students, 20 to University of Virginia students and 10 to Meharry Medical College students. In general, about 50 per cent of the recipients fulfill the service obligation for the full four years.

While this program has not produced as many physicians to fill certain health needs in Virginia as many persons had hoped it would, it has produced some worthwhile results. With increased emphasis and some flexibility in the program, it could be more helpful in the future. There is a need for larger scholarship funds for use with medical students in Virginia's medical schools.

Health Center Programs

The modern medical school in the United States today encompasses a variety of activities under three basic functions: (1) education, (2) research, and (3) medical care. A medical school is a health center in which the training of undergraduate students in medicine is only one aspect of the total program.[1]

The focal point of all professional medical education programs is that of comprehensive patient care. The primary function of the medical school is to create an environment in which well qualified students may acquire the knowledge, habits of study, basic skills, sound attitudes, sense

[1] John E. Deitrick and Robert C. Berson, *Medical Schools in the United States at Mid-Century* (New York: McGraw Hill, 1953).

of personal responsibility for patients and understanding of the ethical principales that motivate the true physician.[1] The emphasis should be more on the "how" than upon the "what" to learn, to educate the student to meet the unknown rather than to prepare him to deal only with present facts. A vital ingredient of such methods is the attitude of the faculty as well as that of the student since the objective is the production of competent, resourceful physicians and scientists rather than mere technologists.[2]

Because medical education should include a broad background in the humanities, as well as the sciences; and because it should be taught in an atmosphere that stimulates unfettered challenge and inquiry, medical schools should be integral parts of university-type institutions.[3] Such institutions can provide programs in which teaching, research, and service are integrated, and the medical school, the dental school, the nursing school, other health related schools, the teaching hospital, the research program and the community health services are considered not as independent entities, but as inseparable components of a single entity.[4]

Both medical schools in Virginia function as integral parts of health centers with training programs in health related professions, teaching hospitals and research programs. The University Medical School enjoys the broader setting of a university with other professional and graduate schools, while the Medical College School of Medicine enjoys a broader association with schools related to the health professions. The following discussion examines the concept of a health center as it applies to programs in Virginia's medical schools.

1. EDUCATIONAL PROGRAMS

The modern medical school must review its educational program periodically to determine how effectively it is doing its proposed task of providing future physicians with an adequate education for the duties that will be awaiting them. Both of Virginia's medical schools have prepared statements of objectives and have undertaken reviews of several phases of their educational programs during the past few years.

Undergraduate Education.—The four-year undergraduate program leading to the M.D. degree is a unity of experiences that cannot be separated easily into the traditional two years of basic science and two years of clinical training. While it is still possible for students to transfer into either one of the Virginia medical schools as a third year student, this is not likely to happen (only three two-year schools now operate in the U. S.).

(a) *University of Virginia.*—It is the objective of the pre-doctoral program to "educate professional persons capable of independent reasoning, creative thought and discriminating action. Such individuals will be equipped, commensurate with their interests and ability, to assemble information, evaluate experience, interpret new data, uncover new knowledge and to propose and test new theories during the entire span of their professional lives whether their branch of medicine be general practice, surgeon general, county health officer, professor of medicine, direc-

[1] Willard C. Rappleye, *The Current Era of Medical Education,* excerpts from Josiah Macy, Jr. Foundation report for 1961-62.

[2] *Ibid.*

[3] Lester J. Evans, et al, *Education for the Health Professions,* p. 12.

[4] *Ibid.*

tor of research or any other. . . . The role of the teacher in stimulating the student to learn is not to be minimized but it should be emphasized that it is the student who does the learning and who must be responsible for his own education, both at the school and after he leaves the school."

(b) *Medical College of Virginia.*—To attain the objective of educating the medical student, the school seeks to "create an atmosphere of scientific scholarship which will inspire the student to observe, analyze, and interpret medical, biological, and social phenomena in a systematic and logical manner. This education is designed to bring about that development in the student which with further study and training after graduation will allow him to become a capable physician or pursue his career in any area of medical science."

Graduate Education.—Graduate education is a term applied to two types of programs: (a) those concerned with the further professional training of interns, residents and fellows; and (b) those leading to the Master of Science or the Doctor of Philosophy degree.

(a) *Interns and Residents.*—In 1962-63, MCV offered 65 intern positions. Of this number, 42 were filled. During the same year, 153 of 197 residency positions offered were filled for a grand total of 195 interns and residents in training. Filled internships included: 18 rotating, 12 internal medicine and 10 surgery. Filled residencies included: 23 internal medicine, 13 obstetrics, 17 pathology, 11 psychiatry and 36 surgery.

During 1962-63, the University had 32 of its 34 internships filled and 121 of its 131 residency positions filled. Filled internships included: 6 rotating, 6 mixed, 12 internal medicine and 8 in surgery. Filled residencies included: 14 internal medicine, 12 obstetrics, 14 psychiatry, 10 radiology and 20 surgery. In addition to these students, MCV had 20 clinical fellows and the University had 28 clinical fellows.

The emphasis in intern and residency programs is on training rather than service, although housestaff in both institutions do provide a great deal of service. Although the patient load is fairly heavy, particularly at MCV, it does not appear to be a deterant to the training programs in graduate work.

(b) *Graduate Degree Programs.*—More and more medical schools are offering programs leading to master's and doctor's degrees. Included among the students working for advanced degrees are M.D.'s who wish to develop themselves in depth in some basic science for positions of teaching and research. During 1962-63, MCV had 51 students enrolled in some type of advanced graduate program; the University had five such students. While graduate programs tend to attract some able physicians from regular practice, the need for teachers and researchers is most important.

Paramedical Education Programs.—The resources of the modern medical school can be utilized more fully by making staff and resources available to the training programs that are closely allied with and indispensable to modern medicine. Such programs at MCV include: medical technology, X-ray technology and physical therapy, as well as other professional programs in nursing, dentistry, pharmacy, hospital administration, and dietetics. Programs at the University of Virginia include

nursing, medical technology and X-ray technology. The full-time equivalent students that utilize medical faculty time and facilities in these allied programs are shown in Table 11 above.

Continuing Education.—The term "continuing education" here means those programs offered primarily for the practicing physician. Medical schools are in a unique position to serve as condensation points or clearing houses for the dissemination of the vast amounts of knowledge being accumulated and extended in medical science today. Both Virginia medical schools now offer some programs of this type. The need for this type of program is so great that it should involve the cooperate efforts of both institutions to develop an adequate program. The key to this educational program, however, is the motivation of the busy physician to continue his learning through active participation in a continuing education program. With new techniques of communication such as educational television, the opportunities in this field are unlimited and could be most rewarding.

2. RESEARCH

Medical research is an inseparable part of basic medical education. Experimental investigation is the principal means by which the medical school fulfills its fundamental obligation for the advancement of knowledge, and it often requires a substantial portion of the operating budget and faculty time. Since research is felt by many to be an integral part of medical instruction, it is assumed that the best teaching is done where a well-balanced research program is provided. Likewise, research and good medical practice are fundamentally linked, for new medical discoveries must be related to the practice of those physicians whose duty it is to apply that knowledge to the needs of patients in the community.

Although medical research is a costly segment of a medical school budget, the rewards or results of well-founded research are substantial. Because of the magnitude of federal and philanthropic funds for the support of research, some medical schools have carried on extensive research programs at a comparatively low investment of school or state funds for "seed money". Both the University of Virginia and the Medical College carry on modest but varied research programs, almost entirely supported by federal and philanthropic grants. As important as research programs are in modern educational programs, there is constant danger that unlimited funds for research may have an undesirable effect in luring away too many promising young physicians into full-time research at the expense of the need for more qualified medical practitioners. The basic problem confronting most medical schools is one of keeping research in balance with the primary mission of the institution—that of training physicians. It does not appear that either the University or MCV has overemphasized research at the expense of teaching.

3. PATIENT CARE

The third major function of the medical center is that of caring for patients who are observed and treated as part of the educational experience of young physicians. Both the University and the Medical College operate teaching hospitals as adjuncts to the medical schools. With the assistance of clinical faculty, house staff, interns and residents, these hospitals provide a tremendous amount of patient care not only for the residents of the communities in which the hospitals are located but for many residents of the state and region as well. Many private patients are treated in both hospitals. The location of MCV in Richmond causes it to be used as a community hospital, especially for the care of indigents.

This load of patients has created two problems of some concern: (1) at times the load tends to become so great that the medical staff, faculty and students, have only time to care for the sick without having time to reflect on the educational process; and (2) the care of indigents tends to be a burden at times on the educational program.

Faculty

Continuing a trend extending back over some years, the medical schools of the United States reported an increase in the numbers of full-time faculty from 11,101 in 1960-61 to 12,040 in 1961-62, an increase of 8.4 per cent. During this same period, the number of full-time undergraduate students increased by 743 or 2.5 per cent. This increased use of full-time faculty members is noted especially in the basic science programs and, to an increasing extent, in clinical programs.

Since the beginnings of medical schools in this country, most clinical instruction has been provided by volunteer physicians, who, from a sense of obligation, interest, or prestige, have assumed teaching duties for which they received no salary. As the study of medicine became more complex and demanding, it was recognized that more and more full-time faculty members were essential.

There is also a continuing and indispensable need for medical students to be associated with a number of gifted physicians whose primary responsibilities are the care of patients in private practice. Thus, there is a need for a balance between full-time and part-time faculty members that will provide the best combination of learning experiences for the medical student.

Larger numbers of faculty are required in modern medical schools for the following reasons: (1) increased emphasis on patient care and other clinical services as part of the training program; (2) larger numbers of graduate students including interns and residents; (3) increased use of medical school faculty in teaching programs in the paramedical and health-related fields of study; (4) the increased emphasis upon research and basic scientific knowledge applied to all fields of medicine. Table 11 shows the total teaching load in the two Virginia medical schools over a three year period to be nearer 500 to 700 students rather than the 300 students in the undergraduate medical school program.

A recent survey by the National Institutes of Health showed that in a selected group of medical schools, about two-fifths of all faculty time was devoted to research, with the proportion being nearer three-fifths among faculty in the basic sciences.[1] Although no detailed study has been completed, it is estimated that not more than one-fourth of the faculty time at the University Medical School or at MCV is spent in research activity.

Many budgeted full-time faculty positions remain unfilled today simply because there are not enough qualified persons who are interested or available to fill these positions at the salaries being offered. In 1962-63, 827 unfilled positions were reported in U. S. medical schools (351 in basic science departments and 476 in clinical departments). The University of Virginia Medical School had seven unfilled positions in 1962-63 in addition to the 134 full-time and 50 part-time positions that were filled. The Medical College had 22 unfilled positions in addition to the 120 full-time and 47 part-time positions that were filled during that year.

[1] Public Health Service, *A Study of 20 Medical Schools*, NIH, 1959.

Competition for new faculty members is very keen among medical schools. Not only are new faculty members interested in reasonable salaries (which are much higher for medical faculties than for most other academic disciplines), but they are also attracted to those institutions where there are adequate facilities and other capable staff members. The problem of recruiting able faculty members is not insurmountable but it will be a problem for some time to come.

Financing Medical Schools

The 87 U. S. medical schools reported total expenditures of $436,053,795 in the fiscal year 1960-61, an increase of 18 per cent over 1959-60 and 82 per cent over 1956-57. Expenditures by the 81 fully-activated four-year institutions ranged from a low of $1,241,753 to a high of $15,814,371. Five schools spent less than $2 million; 42 schools spent between $5 million and $10 million; and 9 schools spent more than $10 million. The average expenditure per four-year medical school during 1960-61 was $5,318,908.[1]

Mounting expenditures in medical schools emphasize the importance of adequate accounting and efficient management of fiscal affairs. The AMA reports that some colleges still experience difficulties in reporting adequate information.[2] This problem is particularly acute in institutions where many programs are interrelated, i.e., patient care and research.

Since it is difficult to make an accurate accounting of expenditures, the Association of American Medical Colleges has initiated a special project to assist medical schools in completing more meaningful analyses of their expenditures. An analysis of income usually presents no problems.

A special study involving 1960-61 expenditures for twelve medical schools (both public and private) is summarized in Table 22. An average of 16 per cent of the expenditures were directly related to undergraduate medical education; another 2 per cent went to graduate education (Ph.D. programs); almost 10 per cent went to intern and residency training; patient services claimed another 14 per cent; hospital, clinic and physician services another 11 per cent; research accounted for 39 per cent; and the balance went to miscellaneous services. In summary, these twelve institutions spent approximately 34 per cent of their income on instructional programs, 39 per cent on research, and 27 per cent on various types of medical care and patient services.

Income analyses among the same twelve institutions showed the largest source of income to be Federal research grants (18 per cent), with patient fees accounting for 12 per cent, and income from hospital and clinics at 11 per cent. Tuition and fees accounted for only 7 per cent of the total income. Almost 25 per cent of the income in these schools came from either endowment or appropriations through the university proper. The figure for appropriations is smaller than would be the case for the average state-supported institution, since some private schools were included in the group.

[1] *JAMA*, Vol. 182, No. 7 (Nov., 1962), p. 172.
[2] *Ibid.*

TABLE 22

SUMMARY OF EXPENDITURES FOR TWELVE MEDICAL SCHOOLS: 1960-61

Programs and Source	Average Per School Amount	%
PROGRAM COSTS:		
Undergraduate Education	$ 607,334	16.0
Graduate Education (MS & PH.D.)	64,962	1.7
Intern & Resident Education	373,983	9.8
Postdoctoral Education	105,577	2.8
Postgraduate Med. Edu. (For Practicing Physicians)	41,516	1.1
Other Educational Programs	93,278	2.4
Total Education Costs	(1,286,650)	(33.8)
Research	1,497,854	39.3
Advisory Services to Granting Agencies	18,103	0.5
Hospital, Clinic & Physician Service	403,090	10.6
Community & Public Services	53,172	1.4
Patient Services	518,891	13.6
Other Service Programs	29,492	0.8
Total Service Costs	(1,022,748)	(26.9)
TOTAL PROGRAM COSTS	$3,807,252	100.0

Source: Association American Medical Colleges, 1962.

Table 23 presents an analysis of percentages of income for the University Medical School and the Medical College for 1961-62 as compared with a similar analysis of the average income for 12 medical schools in 1960-61.

TABLE 23

A SUMMARY OF INCOME BY PERCENTAGES FOR VIRGINIA MEDICAL SCHOOLS: 1961-62

Sources of Income	MCV	U. Va.	Average of 12 schools *
Other Educational Program Budgets	.4	.7	.5
Hospitals and Clinics			
Medical Service Funds (patient fees, etc.)	25.2	39.4	12.1
Teaching and Training Grants (Fed.)	6.6	11.6	9.4
Teaching and Trng. Grants (Non-Fed.)	.....	.....	.....
Research Grants (Federal)	31.9	21.3	18.1
Research Grants (Non-Fed.)	7.6	3.2	6.8
Tuition and Fees	4.7	†	7.3
Overhead on Grants	3.2	.8	4.1
Other Income for Specific Programs	3.6		3.4
TOTAL RECEIVED FROM ABOVE SOURCES	83.2	77.0	75.1
State Appropriations	16.8	23.0	24.9 ‡
TOTAL INCOME FROM ALL SOURCES	100.0	100.0	100.0
TOTAL AMOUNT OF INCOME	$5,062,360	$4,902,594	$3,807,252

* Average of 12 medical schools (private and public) for 1960-61.

† Included in appropriations as Special Fund Appropriation.

‡ This figures includes income from endowment and other sources for the 12-school study.

The University reported a total of $4,092,594 in income for the year, with $1,127,125, or 23 per cent, coming from state appropriations (including student tuition and fees which are appropriated as special revenue). A total of $1,929,957, or 39 per cent of the total budget was collected through medical fees and services to patients by the clinical staff in the teaching hospital. Federal research grants accounted for 21 per cent of the total. If 39 per cent of the income results from patient fees to medical staff, it means that this source of support is unusually high in relation to most medical schools. This may mean that a large portion of the faculty time is spent in patient care in order to assure income for the operation of the medical school.

Income for the Medical College of Virginia School of Medicine amounted to $5,062,360 for 1961-62. State appropriations (including student fees) accounted for 21 per cent of the total. Fees collected for staff services accounted for 25 per cent of the income while Federal research grants amounted to 32 per cent. Again, patient fees account for a comparatively large measure of support for the medical school budget as compared with other medical schools.

The operation of the teaching hospital, as such, is not reported in these figures for either institution. The hospitals receive some support from the General Fund of the State, but the largest portion of the hospital support comes from patient fees. The large volume of indigent care in both hospitals, particularly at MCV, often results in cities and counties not paying for their share of support for indigents. The Medical School Hospitals, then, must assume this support, either indirectly at the expense of the medical school operation, or directly in terms of additional State support.

Until more precise measures of income and expenditures are developed and used in Virginia's medical schools and other medical schools, it is possible to make only gross comparisons and analyses of finances. If it is assumed that the general amount of income and expenditures is related to the general status and quality of a medical school, then Virginia's medical schools enjoy average or slightly above average status in relation to other medical schools in the United States. There are some unmet needs in both medical schools for adequate facilities and staff, however.

Chapter 4

MEETING FUTURE PHYSICIAN NEEDS IN VIRGINIA

Projecting Future Needs to 1975

Virginia has been able to maintain its physician/population ratio of approximately 97 active, non-federal physicians or 119 total physicians per 100,000 population in spite of the gradual decline in the number of physicians graduated from the two state medical schools in recent years. There has been an average net increase of approximately 100 physicians each year over the past eight years in the state. If death and retirement account for about 50 physicians per year,[1] this means that from 18 to 20 more physicians are establishing practices in Virginia each year than are being graduated from the two medical schools combined (132 in 1962 and 1963).

These additional physicians, as well as those who make up for the losses of Virginia graduates to other states, appear to come from the following sources: (1) foreign medical schools and (2) other states, through the efforts of the Virginia Council on Health and Medical Care, or through some attractive intern and residency programs in Virginia hospitals.

Since it is not certain that Virginia can continue to depend upon these sources for attracting physicians in years to come, serious consideration should be given to the problem of training more physicians within the state. Other compelling reasons for considering the training of more physicians include: (1) overcoming existing, and potentially critical, shortages of physicians; (2) keeping up with population growth; and (3) meeting increasing demands for medical care.

Existing Shortages.—Although Virginia's overall supply of physicians appears to be maintaining a stable position relative to the national supply of physicians, there are certain types of shortages that appear to be growing more critical in Virginia. First of all, there is a shortage of general practitioners or family physicians in some areas of the state. Secondly, there is a great need for more housestaff physicians in many hospitals. And, finally, there is a continuing need for more teachers and researchers in medical science.

Population Growth.—Virginia's population increased by 24 per cent from 1940 to 1950 and another 19.5 per cent from 1950 to 1960. This rate for the last decade was slightly faster than that for the nation as a whole. It is estimated that there will be another 33 per cent increase between 1960 and 1975, or an increase from 4 million to 5.3 million. Larger proportional increases in the number of children and older persons will require even more medical care. Much of the population increase will occur in the state's urban areas where more medical care is likely to be sought by the general public.

Increased Demand for Medical Care.—Increases in economic and educational standards tend to create greater demands for medical services. As Virginia's economic growth continues to improve at a faster rate than that of many other states, so will there be a corresponding demand for more medical care on the part of Virginia's citizens.

[1] Estimated by Dr. R. M. Cox.

Relationship to National Needs.—The production of physicians is essentially a national problem in which each state or region must assume some proportional responsibility. Virginia has about 212 per cent of the national population. In 1959, Virginia's 145 medical school graduates represented about 2.1 per cent of all the medical school graduates for that year. Thus, prior to 1959, Virginia was producing slightly more than its proportional share of medical school graduates, but since that time, it has been producing less. At the same time in recent years, Virginia has been dependent upon other states and countries for supplying physicians to meet its needs.

Estimated Need for Graduates.—Virginia would need to produce approximately 193 graduates per year by 1975 just to keep up with population requirements or to maintain the current physician/population ratio (all other things being equal). This means an increase of 33 per cent in the number of entering medical students and a corresponding increase in the number of medical graduates. Allowing for a 10 per cent drop out, about 215 entering medical students would need to be enrolled by 1971 in order to produce as many as 193 graduates by 1975.

More than 193 graduates would be required per year if Virginia is to be less dependent upon foreign countries and other states and if existing shortages in physician supply, and potential increases in demands for medical care are to be met. A conservative estimate of needs for medical graduates would be at least 225 per year by 1975 if existing and potential shortages are to be overcome in a satisfactory manner. Such an increase in production of physicians would permit Virginia to move closer to the national physician/population ratio, although even at this increased rate it would take a number of years for Virginia to catch up with the present national ratio.

Meeting Future Needs for Physicians

There are three primary means of producing more physicians in U. S. medical schools: (1) expansion of existing medical schools; (2) establishment of two-year schools; and (3) the construction of new four-year schools. At least two of these proposals have merit for meeting Virginia's needs.

Expansion of Existing Schools.—Although there is no hard and fast rule regarding the optimum size of medical schools, many educators feel that the optimum size for an entering class is about 100 to 125 students, depending upon the adequacy of the student supply, the faculty requirements, and the availability of facilities, including sufficient clinical patients.

The Medical College of Virginia has already developed plans to expand its first-year class from 84 to 100 students within the next two years. A new medical education building has just been completed that will allow such an expansion. Additional faculty and some facilities, including more library space and clinical facilities, will be required to complete adequate plans for such expansion. By 1971, it is possible that additional students (up to 128) could be admitted in the entering class at MCV so that by 1975, the graduating class could number approximately 105 students.

The Medical School of the University of Virginia has also developed plans to expand its entering class to 100 students within the next few years. To accomplish this, however, will require some funds for planning as well as capital outlay of approximately $3.5 million of State funds to

match Federal funds that would be available as the result of recent legislation. Before such expansion is undertaken at the University, some additional facilities, including added library space, will be required.

On the basis of recent numbers of applications, it would be possible for the two existing schools to expand as planned and still fill entering classes with qualified students. At the present time, however, a larger proportion of these entering students would be from out-of-state since qualified Virginia students are not yet seeking medical education in sufficiently large numbers. As more and more Virginia students are encouraged and assisted in entering medical education, the two schools should have little trouble in maintaining a majority of Virginia students in the total enrollment. Although Virginia students are more likely to remain in Virginia to practice, the two medical schools have experienced better than national records in retaining their graduates to practice in Virginia. The proposed expansion of the two medical schools will provide greater opportunities for Virginians to study medicine.

If the existing schools were to expand their classes it would require additional expenditures for operation. Capital outlay for existing needs and expansion requirements could total as much as $5 million in state funds. Such expenditures over the next 5 to 6 years, however, could assure the graduation of as many as 205 physicians per year by 1975.

Two-Year Medical Schools.—Two-year basic medical science programs have been valuable assets to American medical education. By offering the first two years of medical education to students who then transfer to four-year medical schools for their clinical training, these schools have supplied much-needed students to fill vacancies in the third and fourth years. A number of two-year programs have now become four-year medical schools, leaving only three two-year schools in operation at the present time. Two-year schools have been most successful when developed as a part of a strong graduate science program within a university. More such schools could be developed, but this is not likely to happen in Virginia in the near future. There are no basic science programs avaible at the graduate level at this time that would lend themselves to the development of basic medical education.

In the absence of available students transferring into the upper level of medical training, most medical schools do not make a sharp division between lower and upper levels of the medical school curriculum. This is true to some degree in Virginia's medical schools. However, if some two-year schools were to be developed in this region, the existing Virginia schools could benefit by taking some transfers from these schools and graduate them as physicians.

New Four-Year Medical Schools.—In response to the appeal for more physicians, many states are considering the development of new four-year institutions. As many as ten new four-year schools appear to be committed as of this date, while studies are being carried on in at least six states including Virginia. As many as 20 new four-year medical schools, each graduating 100 students per year, will be required by 1975. These new schools are needed in addition to the expansion of existing schools and the possible development of some two-year institutions.

With the existing medical schools requiring an increasing measure of support for current programs and potential expansion, Virginia is not in a position to undertake to develop still a third state-supported medical school. In this respect, however, a proposal has been made by citizens from the Hampton Roads area to build and operate a private four-year

medical school in that area. While the feasibility and need for such a school is discussed in a separate report, the basic findings of the study may be summarized as follows:

1. Virginia cannot hope to meet the increasing demands for more physicians in the future (beyond 1975) through the graduation of medical students from existing schools, even if these schools are expanded to their optimal size. Therefore, it appears that there will be a need for a new four-year medical school to graduate physicians by 1975.

2. Since the State must find General Tax Funds to provide increasingly adequate support and necessary expansion to the existing state medical schools, it is unlikely that there will be sufficient tax funds available for the construction and operation for a third state-supported school for medicine.

3. Since Virginia already has two of the 42 state-supported medical schools (of a total 87 schools in operation today), it is quite fitting that the proposed medical school be constructed and operated with private funds (with Federal assistance for construction).

4. The Hampton Roads area now has approximately one-fourth of the total population of the state. About 1 million persons live in this area.

5. Since it generally requires at least ten years from the initial planning for a medical school until students can be graduated, the proposed time schedule for developing such an institution is feasible. It is expected that the first entering class would be admitted in 1971 with the first graduates appearing in 1975.

6. The development of a private school of medicine could be the focal point of a third major health center in the state. This would tend to attract and retain more physicians in Virginia; it would provide more educational opportunities for Virginia students; and it would aid in elevating the standards of medical care throughout the state.

7. Although there will be many problems to overcome in financing and operating the proposed medical school, the well-planned proposal made by leaders in the Hampton Roads area to develop a new, private, four-year medical school is timely and should be welcomed and supported by the State of Virginia in every way short of financial obligation.

Recruiting Physicians for Virginia

It is not sufficient to produce more graduates from existing or new medical schools. These graduates and graduates from other states must be persuaded that Virginia is a good place in which to practice medicine. This can be accomplished through active recruiting, the development of better graduate medical education programs (internships and residencies) and the development of better "continuing education" programs for physicians already established in practice.

The Virginia Council on Health and Medical Care.—Virginia is one of a few states where there is an organized effort being made to attract physicians and other health practitioners to the state. The Council was organized in 1946 as a non-profit organization sponsored by professional

health groups and other interested persons. One of the purposes of the group is that of acting as referral agent in placing qualified professional practitioners in communities or positions where their services are requested.

As of April 1, 1963, the Council had requests for 155 positions or openings to be filled in communities throughout the state. Of this number, 84 positions involved general practice and 71 involved specialties. At the same time, the Council had on file the applications from 233 interested physicians—77 general practitioners and 156 specialists. The Council is not always able to match community requests with physician interest; however, many physicians have been placed each year through the group's continuing efforts. The Council has noted that since 1954 there has been a decrease in the number of physicians seeking positions as general practitioners or family physicians and an increase in the number of requests for such practitioners.

Recently, the Council has undertaken an educational program to interest young persons to enter training for one of the health professions. Over a hundred thousand Virginia high school and college students have been contacted in the last three years to interest them in training for careers in the health professions, including medicine. In 1963, the Council contacted 869 prospective medical school graduates and interns in Virginia and nearby states in an effort to interest them in locating medical practices in Virginia.

Graduate Medical Education.—Medical school graduates continue to seek the best possible kinds of training experiences as interns and residents. Virginia needs to develop more and better intern and resident programs not only to provide hospital services for its citizens now but to attract future physicians to practice in the state. Reasonable salary scales, adequate housing arrangements and appropriate educational experiences under competent local physicians and medical education directors are among the factors that tend to make intern and resident positions desirable. Virginia hospitals now have 19 directors of medical education, of which only 8 are full-time salaried.

There is a growing national interest in providing internship and residency training in family practice. In 1962, 29 internships in family practice were offered in the U. S. For 1964, 65 such positions are being offered.[1] In an effort to interest graduates in family practice and to train them for it, a number of family practice internships could be developed in Virginia.

Continuing Education.—Medicine is one of the most rapidly changing professional fields in the world today. With new scientific knowledge about the causes and cures of disease, the modern physician constantly must keep in touch with new developments in his field. While some continuing education programs are now offered by the two Virginia medical schools, these programs could be broadened and developed through cooperative efforts between the schools. With the assistance of medical societies and various professional and non-professional groups interested in medical education, a comprehensive program of continuing education could be developed that would serve the basic needs of the practicing physicians in Virginia. Such a program would tend to attract and retain qualified physicians in the state.

[1] *JAMA*, Vol. 186, No. 7 (November, 1963), p. 671.

Chapter 5

RECOMMENDATIONS

A. *Recommendations Pertaining to the General Assembly of Virginia:*

1. The General Assembly should be encouraged to provide adequate support for the basic requirements for facilities and operating needs of both State medical schools.
2. The General Assembly should be encouraged to look with favor upon the proposed plans to increase the entering class of the Medical School at the Medical College of Virginia to 100 students during the coming biennium, and to provide the necessary funds to support this expansion.
3. The General Assembly should be encouraged to provide planning funds during the next biennium for the Medical School of the University of Virginia to study requirements for expanding the entering class of the Medical School to 100 students, effective about 1967.
4. The General Assembly should consider the problem of indigent patient care in hospitals throughout the state, and particularly in the teaching hospitals of the State medical schools to the end that a special study might be made on the matter of requiring all political units to undertake appropriate support for all indigent patients cared for by those hospitals.
5. The General Assembly should be encouraged to consider the necessity of establishing larger scholarship funds for the State medical schools to use in the encouragement and support of worthy Virginia students in the study of medicine.
6. The General Assembly should be encouraged to look with favor upon the proposed development of a new private, four-year medical school in Hampton Roads and provide every type of support to the project short of financial obligation in recognition that the construction and operation of such a school would make a substantial contribution to the State's increasing need for physicians.

B. *Recommendations Pertaining to the State Medical Schools:*

1. The two State medical schools should be encouraged to continue utilizing every means at their disposal to fill their medical school classes to the end that a capacity number of qualified physicians are graduated each year.
2. Both medical schools should continue to review admission procedures to assure themselves and the State that qualified and promising Virginia students are given every opportunity to enter a State medical school. At the same time, continuing efforts should be made to minimize the number of medical drop outs.
3. Both medical schools should continue to review their educational programs to insure the fact that students are aware of the challenges and opportunities of general practice or family practice in medicine. Special internships in family practice should be developed in the medical schools.

4. Inasmuch as increasing portions of the total income in both medical schools come from research grants, there should be a continuing review to assure a proper balance between teaching and research in the total medical education program.

5. Both medical schools should be encouraged to continue the development of more appropriate records of program costs in keeping with the proposals of the Association of American Medical Colleges.

6. Both medical schools should be encouraged to give serious and realistic consideration to the possibility of the enlargement and geographical expansion of their house staff training programs with hospitals closely affiliated with the medical schools.

7. Both medical schools should be encouraged to develop interinstitutional cooperation through joint committees or other means in such matters as: (1) mutual agreements and assistance in recruiting and admitting students; (2) exchanges of students and/or faculty for special programs; (3) joint use of specialized equipment; and (4) the development of a coordinated continuing education program for practicing physicians in the state.

C. *Miscellaneous Recommendations:*

1. To encourage more physicians to become general practitioners in rural areas of Virginia, the State Scholarship Program should be continued with greater emphasis placed upon its existence and use.

2. Hospitals with adequate facilities and without existing medical school affiliations should be encouraged to develop strong programs of internships and residencies and, where appropriate, to engage full-time directors for these programs.

3. Hospitals that have intern and/or residency programs should give consideration to the adequacy of housing arrangements for housestaff as well as the adequacy of stipends.

4. Hospitals with intern and residency programs should be encouraged to establish special intern or residency programs that meet the training needs of the family physician.

5. The Virginia Council on Health and Medical Care should be commended and encouraged to continue the development of an intensive information program at the high school and college level to acquaint young people in Virginia with the challenge, opportunities, and rewards of a career in the medical sciences.

6. The Virginia Medical Society (or other suitable agency or group) should be encouraged to sponsor a full-time medical director to work with both State medical schools to develop and coordinate a statewide program of graduate education and a broad, practical and convenient continuation education program for practicing physicians.

APPENDICES

EXHIBIT A

SENATE JOINT RESOLUTION NO. 44

Directing the State Council of Higher Education to study the medical educational program and related matters at the State-supported schools of medicine.

Patrons: Messrs. Willey, Hagood and Bird, L. C.

Agreed to by the House of Delegates March 8, 1962

Agreed to by the Senate March 9, 1962

Whereas, a substantial increase is taking place in the population of Virginia; and

Whereas, according to reliable studies there will be a shortage of doctors of medicine in practice in the State in the coming decade unless the number of medical graduates is increased; and

Whereas, the facilities of the existing medical schools may have to be increased in order to provide the skilled physicians needed in Virginia in the future; and

Whereas, the State Council of Higher Education for Virginia is well suited to make studies in the field of higher education in order to provide recommendations to enable the General Assembly to take informed action on the aforesaid problems; now, therefore, be it

Resolved by the Senate, the House of Delegates concurring, that the State Council of Higher Education in Virginia is hereby authorized to make a study and report upon the *role, goals,* and *extent to which the existing medical schools are meeting the needs for qualified medical practitioners,* and whether the State is meeting its obligations and responsibilities in providing adequate opportunities for students, who desire to do so, to obtain a medical education in this State. The Council shall conduct its study with the aid and cooperation of the governing boards of such schools, and the administrative and teaching staffs theerof. The council may solicit the aid of qualified professional personnel, agencies and bodies, in the field of medical education, in assembling and interpreting data pertinent to the study. The Council shall conclude its study and make its report to the Governor and General Assembly not later than July 1, 1963.

APPENDIX TABLE 1

TREND IN NUMBER OF PHYSICIANS (M.D.) IN THE UNITED STATES AND VIRGINIA FOR SELECTED YEARS: 1949-63

Year	Total number	Federal	Active non-Federal	Retired not in practice
UNITED STATES [1]				
1949	201,277	12,536	179,041	9,700
1955	218,061	13,518	192,914	11,629
1957	226,625	16,598	199,366	10,661
1959	236,089	17,519	208,253	10,317
1960	243,062	16,783	213,979	12,300
1962	257,035	19,581	225,214	12,240
1963	267,967	21,976	233,071	12,920
STATE OF VIRGINIA				
1949			2,907	204
1955			3,338	217
1957			3,466	211
1959	4,386	476	3,699	211
1960	4,658	653	3,750	255
1962	4,921	646	4,022	253
1963			4,139	266

[1] Forty-eight States and District of Columbia prior to 1960; 50 States, District of Columbia, Puerto Rico, and outlying areas 1960-63. Excludes physicians reported by AMA as temporarily foreign or address unknown.

Source: AMA data provided to Public Health Service.

APPENDIX TABLE 2

PHYSICIAN/POPULATION RATIOS BY COUNTY IN VIRGINIA: 1960

County	Ratio	County	Ratio
Accomack	56	King George	28
Albemarle	503	King William	79
Alleghany	123	Lancaster	89
Amelia	38	Lee	43
Amherst	44	Loudoun	61
Appomattox	33	Louisa	63
Arlington	138	Lunenberg	40
Augusta	117	Madison	37
Bath	94	Mathews	98
Bedford	55	Mecklenburg	73
Bland	17	Middlesex	63
Botetourt	30	Montgomery	111
Brunswick	34	Nansemond	71
Buchanan	27	Nelson	39
Buckingham	46	New Kent	67
Campbell	129	Northampton	106
Caroline	63	Northumberland	69
Carroll	91	Nottoway	99
Charles City	18	Orange	78
Charlotte	45	Page	64
Chesapeake	136	Patrick	26
Chesterfield	13	Pittsylvania	75
Clarke	99	Powhatan	15
Craig	30	Prince Edward	120
Culpeper	73	Prince George	28
Cumberland	16	Prince William	80
Dickenson	49	Pulaski	77
Dinwiddie	114	Rappahannock	37
Essex	60	Richmond	47
Fairfax	68	Roanoke	171
Fauquier	79	Rockbridge	76
Floyd	36	Rockingham	86
Fluvanna	96	Russell	38
Franklin	35	Scott	39
Frederick	148	Shenandoah	78
Giles	70	Smyth	93
Gloucester	67	Southampton	74
Goochland	22	Spotsylvania	128
Grayson	23	Stafford	6
Green	21	Surry	32
Greensville	62	Sussex	48
Halifax	68	Tazewell	83
Hanover	44	Virginia Beach	52
Henrico	244	Warren	75
Henry	63	Washington	58
Highland	93	Westmoreland	82
Isle of Wight	29	Wise	78
James City	169	Wythe	68
King and Queen	0	York	107

APPENDIX TABLE 3

PHYSICIAN POPULATION RATIOS BY SUB-REGIONS OF VIRGINIA FOR 1960

County Area	% of Change: 1950-60	% of State Pop.	Phys./Pop. Ratios 1960
Washington Area—Fairfax, Arlington	77.9	13.6	100.6
Richmond-Petersburg-Hopewell Area Chesterfield, Henrico, Prince George, Dinwiddie	23.3	13.0	183.0
Hampton-Newport News Area—	41.7	5.1	115.8
Norfolk-Portsmouth Area— Virginia Beach, Chesapeake	29.7	14.6	124.1
Eastern Shore Area—Accomack, Northampton	6.9	1.2	73.5
Southern Tidewater Area—Isle of Wight, Nansemond, Southampton, Surry, Sussex, Greensville	7.7	3.1	60.1
York Peninsula Area—York, New Kent, James City, Chas. City	49.2	1.3	80.0
Middle Peninsula Area—Essex, Middlesex, King & Queen, King William, Gloucester, Mathews	2.0	1.1	63.7
Northern Neck—King George, Northumberland, Westmoreland, Richmond, Lancaster	5.6	1.1	68.1
Fall Line Area—Stafford, Spotsylvania, Caroline, Hanover	20.1	2.1	66.1
Central Piedmont Area—Louisa, Goochland, Powhatan, Amelia, Cumberland, Buckingham, Appomattox	0.4	1.8	39.8
Northwestern Area—Nelson, Albemarle, Orange, Greene, Madison, Culpeper, Rappahannock	6.8	3.0	281.4
Northern Piedmont Area—Loudoun, Fauquier, Prince Wmn., Clarke	48.1	2.7	75.9
Central Southside Area—Prince Edward, Nottoway, Charlotte, Lunenberg, Mecklenburg, Brunswick, Halifax	6.6	3.6	68.8
Western Southside Area—Henry, Pittsylvania	9.6	4.1	70.7
Lower Shenandoah—Shenandoah, Warren, Page, Frederick	8.0	2.2	104.3
Upper Shenandoah—Augusta, Rockingham	13.7	3.2	104.1
Midwestern Piedmont Area—Amherst, Bedford, Campbell	12.0	3.6	98.7
James-New River Highland Area—Highland, Bath, Alleghany, Craig, Botetourt, Rockbridge	0.4	2.2	82.4
Roanoke-Radford Area—Roanoke, Montgomery, Pulaski, Giles	12.2	6.2	143.3
Blue-Ridge-Piedmont Area—Franklin, Floyd, Patrick	0.2	1.3	32.9
Central Southwestern Area—Carroll, Wyther, Bland, Smyth, Washington, Grayson, Scott	1.7	4.7	62.9
Cumberland Area—Dickenson, Buchanan, Tazewell, Russell, Wise, Lee	10.4	5.1	57.3
Total	19.5	100.0	111.0

APPENDIX TABLE 4

ENROLLMENT AND GRADUATES IN THE MEDICAL SCHOOL UNIVERSITY OF VIRGINIA 1950-63

Year	Enrollment			Graduates		
	Virginians	Non-Virginians	Total	Virginians	Non-Virginians	Total
1950-51	223	64	287	51	20	71
1951-52	232	57	289	48	24	72
1952-53	242	46	288	52	19	71
1953-54	235	47	282	61	10	71
1954-55	229	55	284	52	11	63
1955-56	219	69	288	48	13	61
1956-57	217	80	297	54	21	75
1957-58	193	95	288	44	22	66
1958-59	191	92	283	50	18	68
1959-60	193	94	287	48	17	65
1960-61	184	97	281	45	29	74
1961-62	171	96	267	34	21	55
1962-63	179	106	285	41	24	65

APPENDIX TABLE 5

ENROLLMENT AND GRADUATES IN THE MEDICAL SCHOOL OF THE MEDICAL COLLEGE OF VIRGINIA, 1950-63

Year	Enrollment				Graduates			
	Virginians	Non-Virginians	Total	Contract Students *	Virginians	Non-Virginians	Total	Contract Students *
1950-51	266	55	363	(42)	59	14	95	(22)
1951-52	278	48	365	(39)	68	15	102	(19)
1952-53	272	51	366	(43)	65	16	100	(19)
1953-54	282	41	372	(49)	66	11	100	(23)
1954-55	278	37	367	(52)	69	6	100	(25)
1955-56	276	43	366	(47)	66	10	98	(22)
1956-57	272	49	364	(43)	62	10	95	(23)
1957-58	267	55	356	(34)	69	11	97	(17)
1958-59	251	61	354	(42)	66	11	94	(17)
1959-60	229	76	351	(46)	54	17	95	(24)
1960-61	217	79	330	(34)	57	11	89	(21)
1961-62	221	85	318	(12)	57	20	88	(11)
1962-63	220	88	308	(0)	41	26	67	(0)

* Enrolled under contract with West Virginia University and/or under contract with the Southern Regional Education Board; cost of education, in addition to tuition paid by students, financed by the State of West Virginia and/or the State of Florida. Students in this category are not counted as Virginian or non-Virginian.