Report of the Interim Committee on Medical Education to the Minnesota Senate

Sixty-sixth Session
of the
Minnesota
State Legislature

State of Minnesota
SENATE

April 10, 1969

The Honorable James B. Goetz
President, Minnesota State Senate
Senate Chambers
Saint Paul, Minnesota 55101

Dear Sir:

On behalf of the Senate Interim Committee on Medical Education, I have the honor to submit the Committee's findings and recommendations concerning programs for the training and distribution of physicians to fulfill the health care needs and expectations of the citizens of Minnesota.

The Committee was appointed by the Senate Committee on Rules and Legislative Expense pursuant to legislative authorization in Extra Session Laws of Minnesota 1967, Chapter 55, Section 8. The Committee conducted its study throughout the greater part of the interim, eliciting proposals and receiving extensive testimony from all of the State's principal medical and health care organizations and institutions, as well as groups representing the consumers of health services, and from distinguished national authorities on medical education.

In submitting this report, the Committee expresses the earnest hope that it will provide guidance to the Minnesota Senate and the 1969 Legislature in reaching decisions which will uphold and advance Minnesota's position of leadership as a State noted for the excellence of its medical services and institutions and for its devotion to the health and general welfare of its citizens.

Respectfully submitted,

John Tracy Anderson
Chairman

AUTHORIZATION

"There is appropriated from the general revenue fund the sum of $10,000 to the Senate and $10,000 to the House of Representatives for salaries, supplies, and expenses for the continued study of the need for and location of another medical school to be established in Minnesota. The House of Representatives Committee on Rules shall designate the committee or committees of the House to conduct the study on behalf of the House of Representatives; the Senate Committee on Rules and Legislative Expense shall designate the committee or committees of the Senate to conduct the study on behalf of the Senate."

Chapter 55, Section 8, Extra Session Laws, 1967

The Louis W. and Maud Hill Family Foundation, through a grant of funds requested by the Senate Interim Committee on Medical Education, made it possible for the Committee to obtain the consultation of an advisory panel of distinguished medical educators and medical economists. The Committee gratefully acknowledges this further demonstration of the Hill Family Foundation's sincere dedication to furthering the health and welfare of the people of Minnesota.

Members of the Senate Interim Committee on Medical Education

SENATOR JOHN TRACY ANDERSON, District 48, St. Paul, *Chairman**

SENATOR WALTER J. FRANZ, District 18, Mountain Lake
(Appointed March 6, 1969)

SENATOR C. R. (BALDY) HANSEN, District 5, Austin, *Secretary*

SENATOR ROBERT V. LEISETH, District 65, Detroit Lakes

SENATOR A. J. PERPICH, District 62, Eveleth

*Effective following the death of the original Chairman, Senator Harold R. Popp on February 21, 1969.

DEDICATION

To the memory of Senator Harold R. Popp, who served with distinction as Chairman of this Committee until his death in February, 1969. His leadership, vision and untiring devotion to this study of the medical manpower needs of the State of Minnesota gave direction to the Committee's inquiries, and inspiration to all who participated in this undertaking. It is he who deserves major credit for whatever contribution this Report may succeed in making to the understanding and the fulfillment of the health care needs of the people of Minnesota.

The Minnesota State Legislature is faced with the necessity of making decisions affecting the future of medical education and the provision of medical care at a particularly difficult time. The form and function of medical education is being reappraised. The need to provide continuous and comprehensive health care services for persons in all socio-economic and age categories is recognized as imperative. Yet, there is widespread uncertainty concerning how this is to be achieved. For example, the "personal physician" or specialist in family medicine is seen by some as fulfilling this need. Other experts question whether this "super-generalist" will actually provide the answer, suggesting that the solution may instead lie in new methods of organizing and delivering health care (group practice plans, etc.) and in increasing the productivity of physicians through advanced technological means.

Other questions remain unsolved: How will increased Federal support of medical education affect the validity and viability of decisions made now? What is the future role of our teaching hospitals? With Medicare and the expansion of Medicaid, medically indigent patients are, it is evident, destined to dwindle in number and eventually disappear. Traditionally, teaching patients came from the ranks of the medically indigent. Where will they come from in the future? Under these changed conditions, what adjustments will have to be made in the policies of teaching hospitals in order to obtain adequate clinical experience for physicians in training? How does this trend affect the physical expansion of our teaching hospitals?

The Legislature finds itself in a tensionful position. There is an urgent need to move swiftly to increase medical manpower and the availability of medical services, in order to close the widening gap between need and supply. The time lag between the initiation of new programs and additions to the ranks of physicians in practice makes this need all the more pressing. Delay could be detrimental. At the same time, impatience for immediate action should not impel us to take precipitous action. In this period of transition and uncertainty it seems wisest to carefully select for support those programs which promise the most direct and immediate benefits to the health of the State without committing the State to long-term obligations in support of programs that tend to rigidify institutional forms and programs. The recommendations contained in this report seek to single out for special consideration programs which are directly responsive to needs as they are presently perceived and which are sufficiently flexible to be capable of adaptation and adjustment to changing conditions.

General Background

In varying degrees, efforts directed toward the expansion of medical education in Minnesota have been underway for more than ten years. In 1958, the Northlands Association for Medical Education (NAME), proposed establishment of a medical school in St. Paul. In 1959, the Minnesota State Medical Association undertook a study of the State's medical manpower needs. One result was the funding of scholarships designed to attract medical school graduates to rural communities. In 1964, the University of Minnesota Board of Regents proposed to the Louis W. and Maud Hill Family Foundation the sponsorship of a "careful statewide study of needs for additional physicians, dentists, nurses and other health-care personnel and of the potentials for training of such personnel." This led to the study which culminated in the report, "Health Manpower for the Upper Midwest." This definitive survey and analysis is the single most important source of data on the issues considered in this report.

In 1966, the Governor's Commission on Health and Rehabilitation reviewed proposals then being advanced by the University of Minnesota Medical School, the Northern Association for Medical Education and Mayo Clinic. The Commission adopted a resolution recommending appropriation of funds by the 1967 Legislature to finance planning studies by the prospective sponsors of new or expanded medical education programs. Legislation pursuant to this recommendation was introduced to the 1967 Legislature. During the session a House Subcommittee, the House Appropriations Committee, under the leadership of its Chairman, Rep. Richard W. Fitzsimmons, explored Minnesota's health manpower needs in a series of hearings. Representative Rodney Searle, Chairman of the House Universities and Colleges Committee, also proposed legislation authorizing funds for the development of detailed plans for producing additional physicians. The issue remained unresolved as the session drew to an end, and in the closing days, legislation was passed creating special committees of the House and Senate which were charged with studying the question during the interim and transmitting recommendations to the 1969 legislature.

Scope and Procedure of the Study

The Senate Interim Committee on Medical Education was commissioned to study "the need for and location of another medical school in Minnesota." In proceeding to discharge this commission, the Committee conducted a preliminary study of the existing status of medical care in Minnesota, discernible trends in the production and distribution of physicians, and changing patterns in medical care organization and delivery. Its purpose was to identify particular physician manpower deficiencies that should be amended by new or expanded programs of medical education in Minnesota. In this phase of the study, the Committee gathered information from testimony presented by expert consultants, from previous studies of the problem, and from basic documentary sources.

The preliminary findings of this study made it clear that decisions concerning the establishment of a second medical school, or the support of any single institution or program should be considered secondary to the central issue — namely, how to assure the people of Minnesota of adequate medical services when and where they are needed. For this reason, the committee has extended its inquiries beyond undergraduate medical education. It undertook the task of examining an array of interacting factors: The influence of expanded postgraduate training programs in retaining and attracting physicians; the impact of advanced technology in increasing the productivity of medical manpower; the effect of organizational forms and modes of delivery on the physician career and distribution patterns, and the relative costs of alternative methods of meeting the State's medical manpower needs.

In its requests for proposals, the Committee stated a basic question: How can the medical resources of the State be utilized most effectively and economically? This broadened the scope of the inquiry to include consideration of all facilities—voluntary hospitals, public hospitals and medical centers, as well as existing and prospective centers for undergraduate education.

Following its initial assessment of medical care needs, the Committee prepared a detailed position paper defining the goals which, in its view, any program requiring increased State support should be expected to fulfill, and asking interested groups to submit plans indicating how they proposed to pursue these goals.

The goals were set forth as:

1. The training of 100 additional physicians annually for medical practice in Minnesota.
2. Assuring that 65 per cent of these new physicians would specialize in the practice of primary health care, or a related specialty.
3. Assuring the availability of physicians' services in all parts of Minnesota, especially in rural areas and urban poverty areas.
4. Securing a location that would assure an appropriate environment and the necessary resources to permit and support the proposed program of education.
5. The production and retention of physicians, suitably trained to assure adequate health care, at the lowest annual cost per retained graduate.

The Committee asked for proposals outlining two types of programs:

1. Programs of medical education through establishment of a second medical school or expansion of the existing medical school.
2. Programs of graduate medical education from hospitals, complexes or medical groups who presently conduct or would like to develop residency programs.

The Committee's position paper and request for plans established highly specific and uniform criteria, and called for proposals which would be directly responsive to Minnesota's need for improved medical care, especially in rural areas and the inner cities. It also asked for proposals outlining new and innovative approaches to medical education and medical care delivery systems.

Proposals were submitted by:

Hennepin County General Hospital (Minneapolis)

The Mayo Institutions (Rochester)

The Northern Association for Medical Education (St. Paul)

The Northern Minnesota Council for Medical Education (Duluth)

From the University of Minnesota College of Medical Sciences (Minneapolis), the Committee received proposals from the Medical School and the School of Public Health

The Minneapolis Medical Center, Incorporated (Minneapolis)

In addition to presenting written prospectuses to the Committee, each of these groups outlined their proposed plan, together with supporting testimony, in public hearings scheduled in September of 1968. (Representatives of the Mayo Institutions met with members of the Committee, and with the Committee's Panel of Expert Advisors, since their proposal was submitted some time after the hearing at which the other proposals were presented.)

In effect, the plans the Committee received comprise a detailed inventory of Minnesota's resources for medical education, both actual and potential. The number of proposals submitted and the considerable thought and effort that have gone into their preparation is regarded as encouraging evidence of the awareness and responsible interest of Minnesota's medical community in devising solutions for the State's health care needs.

In the final phase of the study, the Senate Committee sought to stimulate open discussion of all aspects of Minnesota's health care needs, and the proposals put forth for their solution. In view of the far-reaching effects of the decisions which may be made during this Legislative session, it is likely that patterns of medical education and medical care in Minnesota will be affected for many years to come. The crucial question is whether increased commitments of funds will produce genuine improvements in the availability, quality, and efficiency of medical care, or will merely result in "more of the same" without eliminating the deficiencies that deprive wide sections of our population of adequate health services. Since the Senate Committee feels that the successful introduction of truly innovative and responsive programs will depend, in large part, on the understanding and acceptance of both the consumers and the providers of health care, it decided to invite representatives from many segments of the population into the review and evaluation phase of this study.

Accordingly, the Committee invited more than thirty agencies and organizations in the State to join in this appraisal of Minnesota's health needs, and of the proposals it had received. These organizations were given copies of the Committee's position paper, and of the proposals submitted for review, and in many cases have sent representatives to the public hearings held by the Senate Committee. At a hearing scheduled expressly for this purpose, spokesmen for several of these groups presented testimony on behalf of their organizations and their interests in the problems before the Committee. These included such State planning groups as the Minnesota Hospital Association, the Governor's Commission on Health, Welfare and Rehabilitation, and the Higher Education Coordinating Commission, professional medical organizations such as the Minnesota State Medical Association, and the Minnesota Academy of General Practice; and consumer groups such as the Minnesota Farm Bureau, Minnesota Farmers' Union, the Minnesota AFL-CIO, and the Minneapolis Pilot City Health Center.

The Committee further recognized the need of obtaining assistance from acknowledged authorities in analyzing and evaluating the respective merit of the proposals it has received. It was felt that a panel of experts in medical education and health care would provide an expert, objective analysis of each proposal in terms of its technical and professional quality, and in terms of its efficiency in meeting the objectives stated by the Senate Committee. The consultants could also be expected to evaluate the proposed programs from a disinterested standpoint, unrelated to the partisan concerns of local communities and sponsoring organizations.

Copies of the Senate Committee's position paper and other relevant background information, as well as copies of each proposal, were supplied to the panel members. Working independently, the consultants familiarized themselves with this information during November and December, 1968. In January, 1969, panel members came to St. Paul for a three-day period of site visits and group deliberation. At this time they agreed on the broad guidelines that would determine their recommendations, and assigned separate tasks leading to the completion of their report. Some of the panel members convened subsequently to discuss a preliminary draft of their final report. The final Report, prepared by the panel chairman, Dr. George James, appears as an appendix to this report.

Defining Minnesota's Need for Physicians

From the outset of its study, the Senate Committee encountered an apparent contradiction. On the one hand, the number of physicians in recent years increased at a pace which has maintained Minnesota's favorable ratio of physicians to population. Minnesota has a ratio of 151 physicians per 100,000 population, slightly higher than the national average, and ranks twelfth among the 50 states. On the other hand, physician shortages exist in both rural and urban areas of Minnesota. In attempting to discover why these shortages exist in spite of an apparently adequate supply of physicians, the Committee has conducted a detailed analysis of available data in order to define the State's physician manpower needs with as much precision as possible.

Measuring the need for doctors is a complicated procedure. Properly, both supply and demand must be assessed. At the very least, the process involves obtaining answers to the questions:

How many physicians does Minnesota have in relation to its population?

Where do Minnesota doctors practice, and how does their geographic distribution correspond to the distribution of the population?

How are Minnesota physicians distributed according to specialty, and how does the supply of specialists accord with the need for specialized services?

Is Minnesota producing enough physicians to meet its present and anticipated needs?

Are changes occurring in the organization and delivery of medical care which might alter estimates of future physician needs in Minnesota?

In spite of the complexity of the task, and the difficulty of finding accurate, consistent, and up-to-date data, the Senate Committee study was able to identify Minnesota's particular physician manpower needs with some precision. On the basis of its findings, the Committee felt justified in redefining the problem that it faced, and established several basic criteria which, in its view, should be met by any program proposed for the State. This section will summarize the Committee's findings and indicate how they led to its recommendations concerning Minnesota's medical manpower needs.

Aggregate Supply and General Trends

The familiar physicians-to-population formula is the most common method of measuring medical manpower needs. This ratio is determined by dividing the total population by the total number of physicians. The result is expressed in terms of the number of physicians per 100,000 persons in a given area. The adequacy of the supply of physician manpower is judged on the basis of comparisons with ratios in other areas, or with an average or purportedly desirable ratio.

TABLE #1 — PHYSICIAN-POPULATION RATIOS RANKED BY STATE (1967)
(Rate per 100,000 population)

Rank	State	Rate	Rank	State	Rate
1	New York	222	26	Nebraska	121
2	Massachusetts	208	27	Iowa	120
3	Colorado	191	28	Kansas	119
4	Vermont	190	29	Oklahoma	119
5	Connecticut	186	30	Virginia	119
6	California	184	31	Texas	118
7	Maryland	177	32	Tennessee	117
8	Rhode Island	164	33	Louisiana	113
9	Pennsylvania	161	34	Nevada	109
10	Florida	160	35	New Mexico	107
11	Washington	156	36	Montana	105
12	MINNESOTA	151	37	North Carolina	105
13	Missouri	150	38	Georgia	104
U.S. 14	Michigan	148	39	West Virginia	104
15	Oregon	147	40	Wyoming	104
16	Arizona	146	41	Indiana	103
17	Hawaii	146	42	Kentucky	101
18	New Jersey	145	43	Idaho	97
19	New Hampshire	142	44	North Dakota	93
20	Delaware	141	45	Arkansas	87
21	Ohio	141	46	South Dakota	86
22	Illinois	139	47	South Carolina	84
23	Utah	134	48	Alabama	82
24	Maine	129	49	Mississippi	76
25	Wisconsin	125	50	Alaska	74

SOURCE: U.S. Dept. H.E.W.; Public Health Service: Health Manpower In The United States: 1965-1967. PHS Publication No. 1000, Series 14, No. 1. Washington: G.P.O., December 1968. Pages 17,18.

The use of this simple formula is inviting and though the physician-population ratio does express a relationship between people and doctors, it provides only a very rough approximation of the adequacy of physician manpower. As one critic of this method has said: "The population-physician ratio . . . reminds one of attempts to measure supply and demand by counting buyers and sellers."[1]

Since the Committee's concern was not with the number of physicians *per se*, but with the supply of physicians' services available to Minnesotans, this approach seemed to have limited value. Although the number of doctors is undeniably related to the services available, there are many additional factors which have significant effects on the supply of medical care. The physician-population ratio, as a member of the Committee's Expert Advisory Panel pointed out, ". . . does not measure physicians' services, . . . does not attempt to include an adjustment for quality, . . . treats all physicians as equal, or, if focused on a particular specialty as if all members of that specialty are homogeneous, . . . and ignores changes in productivity and in medicine itself."[2]

Nor does the physician-population ratio tell us anything about the geographic distribution of doctors, the comparative ages of rural and urban physicians, or the number of physicians inaccessible to the general public because they are enrolled in training programs, or involved in such full-time activities as research, administration, or teaching.

The State's relative rank on the physician-to-population scale has improved over the past three decades as shown in Table 2, which compares

TABLE #2 – NUMBER OF PHYSICIANS AND RATIO PER POPULATION, MINNESOTA AND UNITED STATES, 1940-1967

Year	Population (In 1000s)		Number of Physicians		Physicians Per 100,000 Pop'n	
	Minn.	U.S.	Minn.	U.S.	Minn.	U.S.
1940	2,792	n.a.	3,517	n.a.	126	n.a.
1950	2,982	156,472	4,085	219,997	137	141
1960	3,414	185,369	4,677	260,484	137	141
1967	3,577	195,669	5,351	277,177	149	141

the overall increases in both population and numbers of doctors in Minnesota and in the nation since 1940. Minnesota's population has increased somewhat more slowly than the national rate, while its supply of physicians has grown more rapidly. As a result, the national ratio of physicians-to-population has remained remarkably stable over the period indicated, while Minnesota's ratio has increased.

This could be construed as evidence of Minnesota's favorable position, but, as already indicated, this aggregate ratio does not reflect significant changes in the organization of the medical profession in Minnesota over the past several decades.

Table 3 illustrates the limited and sometimes misleading effect of the aggregate physician-population ratio. In the latter table, State ratios have been calculated excluding physicians in training (interns and residents), and the States ranked accordingly. In this case, Minnesota ranks twenty-third among the 50 states, well below the U.S. ratio of .126. Moreover, while more than half of the States either maintained their rank in the two tables or shifted only slightly, eight States shifted in rank by six places or more, with Minnesota showing the sharpest decline, dropping from twelfth to twenty-third. It is obvious that the aggregate physician-population ratio (Table 1) grossly overestimates the supply of doctors available to Minnesotans, by failing to take account of the fact that 24 per cent of the State's physicians are in internship or residency programs. It is obvious that these figures cannot be accepted as evidence that Minnesota is well supplied with physician manpower, and that to proceed under this comforting illusion would be a grave error.

TABLE #3 – PHYSICIAN-POPULATION RATIOS (EXCLUDING PHYSICIANS IN TRAINING) RANKED BY STATE (1967)

Rank	State	Rate	Rank	State	Rate
1 (1)	*New York	180	26 (34)	Nevada	109
2 (2)	Massachusetts	173	27 (25)	Wisconsin	109
3 (4)	Vermont	170	28 (27)	Iowa	107
4 (3)	Colorado	166	29 (29)	Oklahoma	107
5 (6)	California	161	30 (36)	Montana	105
6 (5)	Connecticut	159	31 (40)	Wyoming	104
7 (10)	Florida	145	32 (30)	Virginia	103
8 (7)	Maryland	140	33 (28)	Kansas	102
9 (8)	Rhode Island	139	34 (31)	Texas	102
10 (11)	Washington	139	35 (35)	New Mexico	99
11 (16)	Arizona	137	36 (43)	Idaho	97
12 (9)	Pennsylvania	137	37 (32)	Tennessee	97
13 (18)	New Jersey	132	38 (41)	Indiana	95
14 (19)	New Hampshire	131	39 (39)	West Virginia	95
15 (15)	Oregon	131	40 (33)	Louisiana	93
16 (20)	Delaware	130	41 (44)	North Dakota	91
U.S.17 (24)	Maine	126	42 (42)	Kentucky	90
18 (13)	Missouri	125	43 (37)	North Carolina	90
19 (14)	Michigan	124	44 (38)	Georgia	89
20 (21)	Ohio	119	45 (46)	South Dakota	84
21 (17)	Hawaii	118	46 (47)	South Carolina	79
22 (22)	Illinois	116	47 (45)	Arkansas	78
23 (12)	MINNESOTA	115	48 (48)	Alabama	74
24 (23)	Utah	115	49 (50)	Alaska	74
25 (26)	Nebraska	109	50 (49)	Mississippi	70

SOURCE: Ibid., pages 17,18. American Medical Association, Directory of Approved Internships & Residencies, 1967-68. Chicago: AMA, 1967. Pages 6, 12.
*Numbers in parenthesis indicate rankings of states in Table # .

Physician Manpower Trends in Minnesota

To properly evaluate Minnesota's physician supply, it is important to understand that fundamental changes have taken place in medical practice in recent years. These changes appear in certain statistical trends that are described below which provide some explanation of existing deficits and suggest possible solutions to the problems we face.

Some of the changes can be seen in Figure 1 which depicts the ratio per 100,000 population

of total physicians, active physicians, and "personal physicians" in Minnesota from 1940 to 1965.

The increase in total number of physicians between 1940 and 1950 is the product of a war-time acceleration of the program at the University of Minnesota Medical School, followed by the return of many physicians from military service. During the next decade the ratio remained rather stable, then turned upward again in the 1960's, the result of gradual increases in the medical school enrollment (see Table 4), combined with the rapid growth of the Mayo Clinic graduate program.

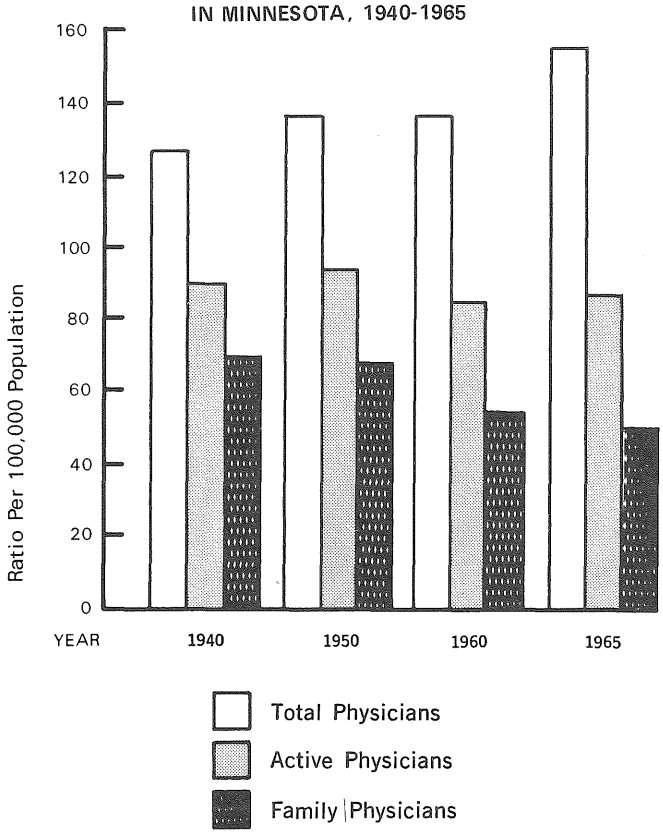
TABLE #4 PHYSICIAN GRADUATES, UNIVERSITY OF MINNESOTA SCHOOL OF MEDICINE, 1940-1968

Year	Phys. Grads	Year	Phys. Grads	Year	Phys. Grads
1940	117	1950	94	1960	123
1	109	1	113	1	113
2	112	2	116	2	124
3	117	3	117	3	125
4	107	4	133	4	135
5	255	5	117	5	144
6	115	6	115	6	136
7	106	7	110	7	157
8	157	8	114	8	153
9	85	9	114		

The ratio of active physicians per 100,000, however, has declined somewhat over the same period. "Active physicians" are defined by "eliminating all doctors who describe themselves as retired, not in practice, or still in hospital training."[3] The widening gap between the total physician ratio and the active physician ratio is an indicator of the phenomenal growth in the specialization of physicians which will be discussed below. Furthermore, it is probable that the information on which Figure 1 is based underestimates the extent of the decline in the numbers of "available doctors" in Minnesota, since it includes physicians in Federal service, and those devoting full time to such activities as research, administration, and teaching. (The Committee cites this as one example of the lack of consistency and currency of available statistical information which has complicated its efforts to assess Minnesota's physician manpower needs.) Whatever the exact magnitude of the decline, however, it is clear that a growing number of Minnesotans are finding it difficult to obtain the services of a doctor.

Figure 1 also pictures the trend in the ratio of personal, or family physicians, to Minnesota's population. This category includes general practitioners, internists, and pediatricians — the so-called "first contact" physicians to whom most persons first turn when seeking medical care. The marked decline in this ratio since 1940 can be associated with rising public dissatisfaction and disaffection over delays in obtaining appointments for routine care, long periods of waiting in doctors' offices, difficulties in obtaining medical care at night or on weekends, and sometimes hurried, impersonal service. This trend away from family practice further reflects the growth of specialization, and underscores the critical distribution problems that are one of its unfortunate consequences.

FIGURE #1 – RATIO PER 100,000 POPULATION OF TOTAL PHYSICIANS, ACTIVE PHYSICIANS, & FAMILY PHYSICIANS IN MINNESOTA, 1940-1965



A study of the trends in the age distribution of Minnesota physicians provides a basis for estimating future manpower supplies, and throws additional light on existing shortages. Table 5 shows the median age of active physicians in Minnesota during the 1940 to 1965 period. The steady increase in the median age of Minnesota's active physicians in this 25-year period indicates that the

TABLE #5 MEDIAN AGE OF ACTIVE PHYSICIANS IN MINNESOTA BY TYPE OF PRACTICE, 1940-65

YEAR	GPs	SPECIALISTS	ALL
1940	41.5	42.2	41.6
1950	42.4	45.3	42.9
1960	46.7	45.3	46.2
1965	47.1	45.2	46.5

number of younger physicians entering practice has not kept pace with the number who have died or retired. The same table shows that the median age of general practitioners in Minnesota has risen at an even more rapid rate, while the median age of specialists has remained fairly stable. These findings may be taken as evidence of the fact that fewer and fewer physicians entered the field of general practice during this period, while gains and losses in the ranks of the specialists are fairly well balanced.

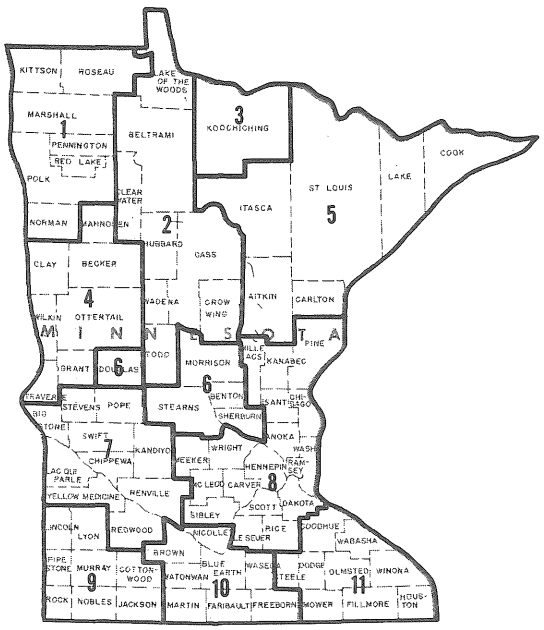
TABLE #7 ACTIVE PHYSICIANS PER 100,000 POPULATION BY DEGREE OF URBANIZATION OF COUNTY, MINNESOTA, 1940-1960

	1940		1950		1960	
Percent Urban Population	Number of Counties	MD/ 100,000	Number of Counties	MD/ 100,000	Number of Counties	MD/ 100,000
0-9	32	64	27	56	24	53
10-19	11	65	7	68	6	49
20-29	16	63	15	71	13	68
30-39	12	67	17	75	20	58
40-49	5	115	8	161	8	62
50-59	7	86	6	73	4	90
60-69	1	90	4	138	8	134
70-79	1	97	1	104	1	101
80-89	0	0	0	0	1	16
90-100	2	124	2	117	2	138
TOTALS	87	101	87	98	87	93

SOURCE: Health Manpower for the Upper Midwest, Table 25, page 42.

In terms of the geographic distribution of Minnesota's physicians, it is clear that there is a definite trend toward concentration in urban areas. The Hill Report analyzes this trend in terms of shifts in the distribution of both population and physicians in the State's 11 hospital planning regions,[4] shown in Figure 2. Table 6 shows that, while the population of Minnesota's rural areas has declined over the period shown, the number of physicians in these areas has declined even more rapidly. In 1940, Region VIII (the seven-county metropolitan area) had slightly over 43 percent of the State's population and slightly less than 46 percent of its physicians. By 1960, 51 percent of Minnesotans lived in the metropolitan area which had slightly more than 54 percent of the State's physicians.

FIGURE #2 –



During the 1940-1965 period, all of the rural regions shown had smaller proportions of Minnesota's physicians than of the State's population. However, physician-population ratios in these regions declined over this period, indicating that the supply of rural physicians was diminishing more rapidly than the population.

The urban overshift is manifested in a somewhat different manner in Table 7 which relates physician-population ratios to the rate of urbanization of the 87 counties in Minnesota from 1940 to 1960. Counties with less than 20 percent of their population residing in urban centers have lost doctors since 1940, and counties with less than 50 percent of their population living in urban cen-

TABLE #6 Percentage Distribution of Population, Active Physicians, & Active Physicians Per 100,000 Population by Hospital Planning Region, 1940 to 1965

	1940			1950			1960			1965		
	% of State Pop.	% of MD's	MD/ 100,000	% of State Pop.	% of MD's	MD/ 100,000	% of State Pop.	% of MD's	MD/ 100,000	% of* State Pop.	% of MD's	MD/* 100,000
Region I	4.19	2.4	60	3.65	1.9	51	2.94	1.7	55		1.4	
Region II	5.21	3.0	60	4.69	3.1	64	3.83	2.6	64		2.2	
Region III	0.61	0.4	65	0.57	0.3	53	0.53	0.3	50		0.3	
Region IV	5.08	3.2	65	4.75	2.8	59	4.26	2.7	59		2.3	
Region V	10.46	9.1	89	9.69	9.3	94	9.57	9.4	90		7.7	
Revion VI	5.07	3.2	64	4.84	3.1	63	4.26	2.8	55		3.2	
Region VII	6.21	4.1	68	5.76	4.5	77	4.90	3.8	71		2.9	
Region VIII	43.32	45.8	108	46.71	55.5	117	51.00	54.2	98		51.4	
Region IX	4.52	3.6	81	4.26	3.1	71	3.74	2.4	60		2.0	
Region X	6.79	6.4	97	6.64	5.6	83	6.28	5.5	82		4.5	
Region XI	8.56	18.6	223	8.45	10.5	123	8.31	14.5	162		19.3	
TOTAL	100.00	100.00	101	100.00	100.00	98	100.00	100.00	93		105	
Base For Calu-lation	2,792,300	2,868		2,982,483	2,936		3,413,864	3,163		3,611,868	3,787	

SOURCE: Health Manpower for the Upper Midwest, Table 20, page 40.

ters have lost doctors since 1950. To some extent, this urbanization is a part of a general population trend, but it is also the result of the growth of specialization in medical practice, as we shall see.

Migration of Physicians

Another general trend of great significance to this study concerns the migration of physicians. Available statistical data indicate that for the past 50 years Minnesota has been heavily dependent upon the in-migration of physicians educated elsewhere to fulfill its medical manpower requirements. Table 8 shows the extent to which medical schools outside Minnesota have contributed doctors to the State, and the number of Minnesota graduates lost to other areas over the period 1910 to 1965. In 1910, the University Medical School was 20 years old and had contributed 140 physicians to other areas. 1,260 physicians educated outside the State were practicing in Minnesota. By 1965, the number of Minnesota graduates practicing outside the State was about equal to the number of doctors educated elsewhere practicing in Minnesota. At the present time, as shown in Table 9, 54 percent of the "physicians treating patients" in Minnesota are graduates of the University of Minnesota College of Medical Sciences. The proportion of general practitioners educated in Minnesota is considerably higher, and has steadily increased from about 25 percent in 1910 to 67 percent in 1968. It is likely that the decline in general practitioners and their lower mobility is responsible for this upward shift in proportion.

A recent study of the movement of physicians into and out of the Upper Midwest has traced the origin of in-migrating doctors and the practice locations of those leaving the area, from 1909 through 1961. While the analysis included the Dakotas and Montana in addition to Minnesota, the findings throw additional light on the migratory trends of physicians. The principal finding of this study is that "the Upper Midwest has enjoyed a net gain in each of the six decade years studied, but there has been a progressive decrease in the

TABLE #8 NUMBER OF PHYSICIANS EDUCATED IN MINNESOTA PRACTICING ELSEWHERE COMPARED WITH THOSE PHYSICIANS EDUCATED ELSEWHERE PRACTICING IN MINNESOTA

Year	Number of Physicians Educated in Minnesota Practicing Elsewhere	Number of Physicians Educated Elsewhere Practicing in Minnesota
1910	140	1260
1920	243	1557
1930	572	1564
1940	936	1556
1950	1239	1721
1960	1960	1485
1965	1815	1865

SOURCE: Health Manpower for the Upper Midwest, Table 29, page 45.

TABLE #9 UNDERGRADUATE TRAINING OF "PHYSICIANS TREATING PATIENTS"

UNDERGRAD. MED. EDUC.	Gen. Pract.		Specialists		Total Phys.	
	%	No.	%	No.	%	No.
Minnesota	67%	760	47%	887	54%	1647
Other	33%	381	53%	1005	46%	1386
TOTALS	100%	1141	100%	1892	100%	3033

SOURCE: Parameters of Medical Practice & Their Significance, Table 12, page 16.

TABLE #10 PHYSICIAN GAINS & LOSSES, UPPER MIDWEST, 1909-1961

Region	1909	1921	1931	1940	1950	1961
Adjacent						
Gain	268	402	458	510	527	581
Loss	36	49	86	129	139	179
Pacific						
Gain	8	18	29	60	79	101
Loss	66	109	234	266	428	739
Mountain						
Gain	9	16	18	24	40	56
Loss	5	5	12	22	42	102
North Central						
Gain	1,410	1,781	1,478	1,391	1,297	1,028
Loss	8	38	96	141	198	208
Southwest Central						
Gain	4	9	26	44	81	86
Loss	1	3	11	39	50	81
Southeast Central						
Gain	68	88	83	59	70	57
Loss	3	3	6	13	11	29
South Atlantic						
Gain	84	173	168	176	186	158
Loss	16	11	24	49	49	72
Middle Atlantic						
Gain	353	326	282	239	305	307
Loss	7	13	65	103	93	132
New England						
Gain	90	95	80	103	133	124
Loss	6	7	9	15	28	39
Canada	290					
Gain	290	222	236	198	137	146
Loss	2	1	5	6	5	1
Other Foreign Countries						
Gain	76	63	45	52	46	195
Loss	1	4	24	20	15	37
Federal Service						
Gain †	....	....	....	....	....	....
Loss	‡	‡	‡	132	77	376
Totals for Upper Midwest						
Gain	2,660	3,139	2,903	2,856	2,901	2,839
Loss	154	243	572	935	1,135	1,995
Total Net Gain	2,506	2,950	2,331	1,921	1,766	844

*Graduates of the medical schools of Minnesota, North Dakota, and South Dakota who are practicing in other regions are defined as "losses"; physicians educated in other regions who are practicing in the Upper Midwest are defined as "gains."

† There are no medical schools in "Federal Service."

‡ Data are not available.

SOURCE: Ivan J. Fahs, et. al., "Physician Migration: A Problem in the Upper Midwest", J. of Medical Education, Volume 43, pages 735-740, (June, 1968).

magnitude of this gain." As shown in Table 10, the number of in-migrating physicians has continued relatively stable through five decades. At the same time, however, there has been a steady and sizeable increase in the numbers of Upper Midwest medical graduates migrating out of the area. Since the Upper Midwest "does not educate enough physicians even to maintain the status quo," the progressive decline in the magnitude of the net gain "portends a serious physician manpower problem for the Upper Midwest."[5]

The data in Table 10 also show the particular regions from which in-migrating physicians have come, and those to which out-migrating medical graduates have gone. "It is clear," say these authors, "that the Upper Midwest has been a long-term debtor to North Central and adjacent areas, and a long-term creditor to Pacific areas."[6]

The migration of physicians from rural to urban Minnesota and the likelihood that the number of out-migrating physicians will soon exceed the number of in-migrating physicians are factors that have contributed to Minnesota's medical manpower problems. Unless ways can be found to reverse these trends, the State's already critical problems will worsen. Many of the general trends noted here are the result, directly or indirectly, of profound changes that have taken place in medical science and practice. These changes must be understood before solutions can be found.

Growth of Specialization in Medical Practice in Minnesota

Without doubt, the most profound and far-reaching change in medical practice in this generation has been the phenomenal growth of specialization. The limitation of the physician's services to some specific and narrowly circumscribed area of medicine has been the inevitable corollary of the "information explosion" generated by our medical research laboratories; it is now utterly impossible for any physician to master the entire body of medical knowledge. Even keeping pace with new developments in the narrowest of specialties requires consistent effort and study.

Specialization has had an unsettling effect on the organization and delivery of medical care, as William Stewart, M.D., Surgeon-General of the U.S. has observed:

> "Specialization has completely altered the meaning of the physician-population ratio by which manpower needs have been measured for many years. We know that the gross ratio has remained fairly constant in recent years. We do not really know what the ratio means."[7]

A. General Trends in Specialization Among Physicians in Minnesota

The magnitude and nature of the enormous impact that specialization has made on physician manpower in Minnesota since 1910 is illustrated in Table 11 and Figure 3. In 1910, 95 percent of the doctors in Minnesota were general practitioners. Of the small number of specialists who were practicing in the State at this time (a total of 100), most were surgeons. In less than two generations only about one physician in three in Minnesota was a general practitioner, and the proportion continues to decline.[8]

As shown in Figure 3, the decline in general practitioners has been matched by a corresponding increase in the various specialty branches of medicine.

Revealing as these statistics are, they fail to tell the full story of the impact specialization has had on medical practice in Minnesota. There are such additional considerations as the following:

1. Many doctors who do not classify themselves as full specialists devote some time to the practice of a specialty in which they have had some residency training. "Twenty-three percent of GP's list secondary specialization . . . unmeasured numbers of others are known to practice a specialty part-time but do not proclaim specialization . . . From the functional standpoint, therefore, we have much more specialization than previously realized."[9]
2. The GP is more likely to be in private practice than any of the specialists, and the per-

TABLE #11 – PERCENTAGE DISTRIBUTION OF ACTIVE PHYSICIANS IN MINNESOTA BY TYPE OF PRACTICE, 1910-1965

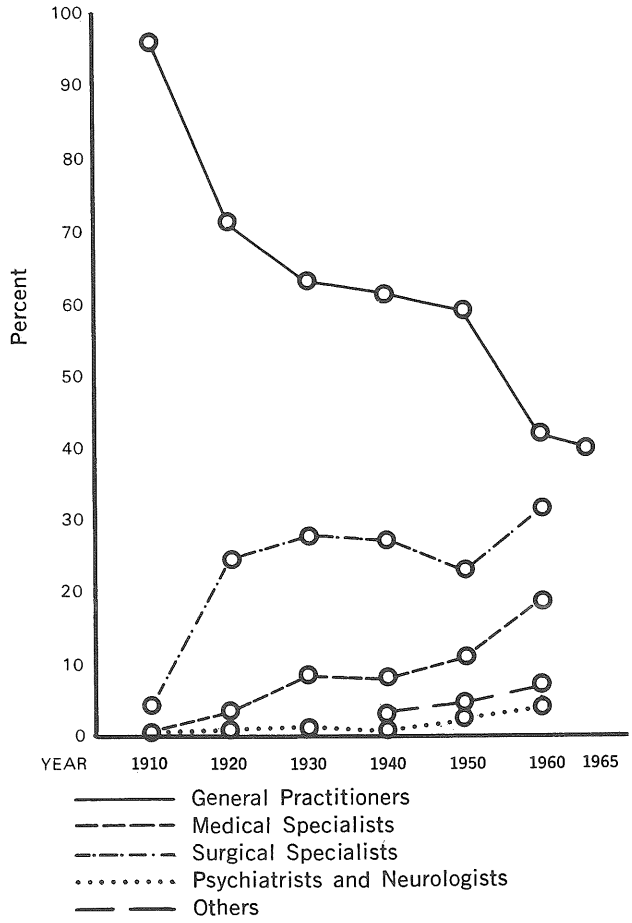
Field of Practice	1910	1920	1930	1940	1950	1960	1965
General Practice	95.0	70.3	63.8	61.6	59.3	41.0	36.7
Med Specialists	0.5	3.8	8.0	7.9	10.7	18.3	n.a.
Surg Specialists	4.3	24.6	26.8	26.5	23.8	31.0	n.a.
Psychiatrists & Neurologists	0.2	1.3	1.4	1.1	2.2	3.6	n.a.
Others	–	–	–	2.9	4.0	6.1	n.a.
	100.0	100.0	100.0	100.0	100.0	100.0	–
Base of calculat'n	2084	2465	2791	2861	2936	3163	n.a.

SOURCE: Health Manpower for the Upper Midwest, Table 9, page 32.

centage of doctors in private practice is declining (down from 72 percent in 1950 to 63 percent in 1965).

3. Specialization requires the physician to delay the start of medical practice by entering a lengthy period of residency training following graduation from medical school.
4. Minnesota's two major medical centers (the University of Minnesota and the Mayo Clinic) and its other fine graduate programs serve to attract and hold physicians educated elsewhere for practice in the State. These strong residency programs have given Minnesota the highest percentage of physicians-in-training among the 50 States. (Cf. Table 3 and the accompanying discussion.)
5. Specialists tend to locate in urban centers rather than rural areas, since they depend upon larger supporting populations, and on the technical facilities and personnel found in urban hospitals.

FIGURE #3 – PERCENTAGE DISTRIBUTED OF ACTIVE PHYSICIANS IN MINNESOTA BY TYPE OF PRACTICE, 1910-65



B. Estimating the Need for Special Medical Services in Minnesota

Recently, Winston Miller, M.D., analyzed the distribution of physicians in Minnesota in terms of supply and demand.[10] His purpose was to compare the actual number of physicians in each of the various specialties with some estimate of the need for specialized medical care services among Minnesota residents. Since we do not know in what proportion Minnesotans consult with specialists in the various branches of medical practice, it was necessary to estimate this utilization rate. The basis used for this estimate was the staffing patterns of six large pre-payment group practice plans. Table 12 shows the average physician-population ratios, by specialty, for these six groups based on actual

TABLE #12 – PHYSICIANS PER 100,000 POPULATION SERVED, AVERAGE IN SIX MEDICAL GROUPS PROVIDING PREPAID SERVICES, BY SPECIALTY

	Average MDs per 100,000 Population Served	
	Mean	Median
Total	109.4	101.2
Internal Medicine	45.2	44.9
Pediatrics (Personal Physicians)*	18.0 (63.2)*	15.8 (60.7)*
Obstetrics	9.1	8.0
Orthopedics	3.2	3.0
Ophthalmology	3.7	3.3
Otolaryngology	4.6	3.5
Surgery	6.5	6.7
Urology	1.9	1.5
Radiology	4.4	4.0
Physical Medicine	1.3	1.0
Anesthesiology	1.5	1.5
Pathology	1.8	1.6
Psychiatry & Neurology	3.8	2.5
Allergy & Dermatology	4.4	3.9

*Includes internists & pediatricians.
SOURCE: Health Manpower: Perspective 1967. Bureau of Health Manpower, U.S.P.H.S. (PHS Publication No. 1667) Washington: Government Printing Office, 1967. (See pages 9, 10 & 75)

services provided. The Bureau of Health Manpower calls these rates "the best available approximation of personal health care needs today," since prepaid group practice organizations, by their nature, develop staffing patterns in direct response to consumer demands for medical services. Dr. Miller acknowledges that these utilization rates probably do not correspond perfectly with the medical care needs of Minnesotans, but they are nevertheless useful in preparing "specific, if admittedly rough, estimates of needs for the various specialties as well as for total physicians."

These estimated needs were then used as a criterion and compared with existing ratios of prac-

ticing physicians to population in Minnesota. Dr. Miller applied the more conservative median staffing ratios to each of the seven geographic Planning Areas shown in Figure 4 and converted shortages and surpluses into numbers. Table 13 shows the results of this analysis by Planning Areas. It should be noted that "the shortage of specialists

TABLE #13—SHORTAGES & EXCESSES OF FUNCTIONAL SPECIALISTS CALCULATED FROM PRE-PAYMENT GROUP PLAN RATES

SPECIALITY	PLANNING AREAS							
	A (NW)	B (N E)	C (W)	D (E)	E (SW)	F (SE)	F (SE*)	G (MET)
Personal Physicians (GP, IM, Peds)	-39	-52	-41	-74	-44	+56	-101	-200
Allergy & Dermatology	- 6	- 7	- 8	-12	-11	-14	- 16	- 23
Obstetrics-Gynecology	- 8	- 4	-13	-22	-18	-16	- 25	- 17
Orthpedics	- 5	- 2	- 4	- 8	- 7	+ 2	- 10	+ 14
Ophthalmology	- 4	+ 2	- 4	- 7	- 7	+ 7	- 5	+ 17
Otolaryngology	- 5	- 3	- 5	-10	- 9	- 8	- 14	- 17
Surgery	+ 1	+32	- 4	- 4	+ 2	+39	+ 3	+119
Urology	- 2	+ 3	- 2	- 4	- 3	+ 2	- 6	+ 9
Radiology	- 4	+ 2	- 4	- 8	- 5	+ 6	- 11	+ 12
Physical Medicine	- 2	- 3	- 2	- 4	- 3	+ 4	- 5	- 8
Anesthesiology	- 1	+ 5	- 1	- 1	- 4	+21	- 6	+ 47
Pathology	- 2	+ 6	- 2	+ 1	- 2	+16	- 4	+ 25
Psychiatry-Neurology	- 3	+ 2	- 1	- 5	- 6	+32	- 6	+ 55
TOTALS	-80	-20	-92	-150	-117	+146	-206	+ 33

*Olmsted County (Mayo) is omitted from Planning Area F totals in this column to "eliminate the distortion of Mayo Clinic staff".

other than personal physicians exceeded (the shortage) of personal physicians" in every area except the metropolitan area; Area F (Mayo Clinic); and Area B (Duluth Clinic). In these three areas there are surplus numbers of most types of specialists; but a significant shortage of personal physicians in Area B and an even greater shortage in the metropolitan area. Area F has been tabulated in two columns in order to show the distribution of specialists in that section with and without Olmsted County to indicate the effect of the Mayo Clinic staff, on this analysis of physician manpower supply in that Planning Area.

Table 14 shows Minnesota's out-state physician manpower supply of specialists by category, and compares it with the total supply of physicians in Minnesota. The figures indicate that out-state areas need a total of 668 physicians across all of the specialties listed, except surgery, to meet the various special medical care needs of these residents. Fifty-two per cent of the doctors needed should be personal physicians.

According to this same table, Minnesota's total shortage of physicians would only be 282 if the present supply of doctors could be distributed, geographically and by specialty, in relationship to the needs of the State's residents. This calculation is purely theoretical; it is admittedly impossible to

TABLE #14 — SHORTAGES & EXCESSES OF PHYSICIANS CALCULATED FROM GROUP PLAN RATES, OUT-STATE AND TOTAL

Specialty	Out-State (Areas A to F*)	Total State
Personal Physicians (GP, IM, Peds)	—352	—393
Allergy & Dermatology	— 60	— 81
Obstetrics-Gynecology	— 90	— 97
Orthopedics	— 35	— 9
Ophthalmology	— 25	+ 4
Otolaryngology	— 45	— 57
Surgery	+ 30	+185
Urology	— 14	+ 3
Radiology	— 31	— 1
Physical Medicine	— 18	— 17
Anesthesiology	— 8	+ 67
Pathology	— 3	+ 42
Psychiatry-Neurology	— 19	+ 73
TOTALS	—668	—282

*Excludes Olmsted County

deploy physicians in direct correspondence to the need for specialists and the needs of the respective geographic areas of the State. Nevertheless, this comparison of actual conditions to an ideal standard reveals the true gross imbalances in the distribution of Minnesota's medical manpower. It is deeply disturbing to find that Minnesota has an oversupply of physicians in six specialties in the face of its critical shortage of personal physicians. Moreover, in one of these specialties (anesthesiology), we have more than twice the number of practitioners that estimates of the need for this service indicate are required. In three others, (surgery, psychiatry - neurology, and pathology) the supply is approximately 75 per cent greater than the estimated need. It appears that the present distribution process is a random one; physicians select specialties and practice locations with little or no

TABLE #15— COMPOSITE ESTIMATE OF SHORTAGES OF PHYSICIANS

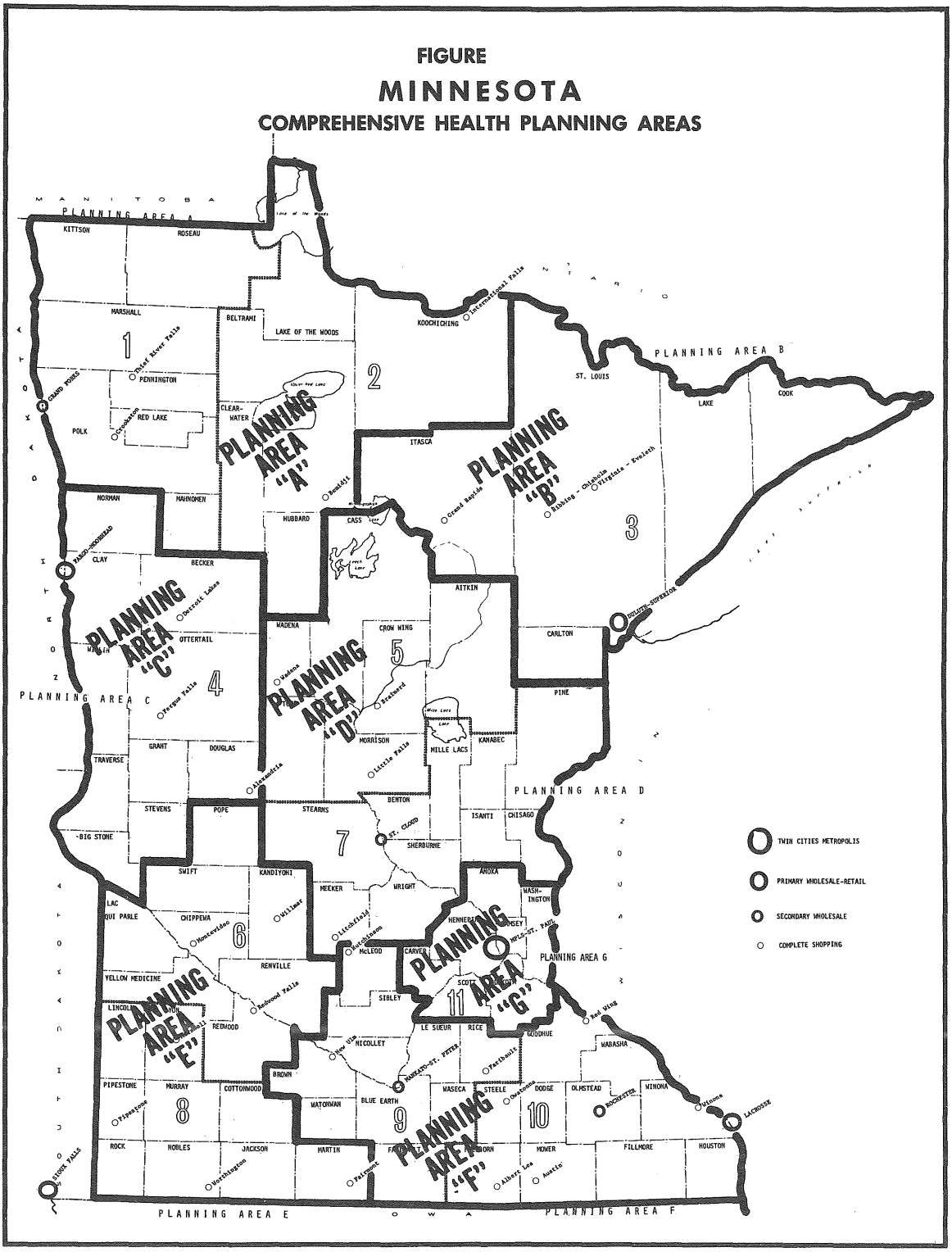
Specialty	Out - State (Areas A to F*)	Metropolitan (Area G)	Total State
Personal Physicians (GP, IM, Peds)	351	200	551
Allergy & Dermatology	60	23	83
Obstetrics-Gynecology	90	17	107
Orthopedics	35	0	35
Ophthalmology	27	0	27
Otolaryngology	45	17	62
Surgery	8	0	8
Urology	17	0	17
Radiology	32	0	32
Physical Medicine	19	8	27
Anesthesiology	13	0	13
Pathology	10	0	10
Psychiatry & Neurology	21	0	21
TOTALS	728	265	993

*Omits Olmsted County "to eliminate the distortion of Mayo Clinic staff."

FIGURE

MINNESOTA

COMPREHENSIVE HEALTH PLANNING AREAS



reference to the health care needs of the people of Minnesota. This can justly be considered a costly misuse of financial and manpower resources which are vital to the health and welfare of our citizens.

The Northlands Regional Medical Program report ("Parameters of Medical Practice") states: "Since it is not feasible to move physicians from areas (or specialties) which are over-staffed to areas (or specialties) which are under staffed, the summation of shortages may be considered as total unmet needs."

Table 15 presents a composite estimate of physician shortages in Minnesota by specialty, based on a tabulation of the shortages shown in Table 13. Unlike Table 13, excess numbers of physicians in certain specialties and Planning Areas are simply omitted in this Table.

According to this composite estimate, Minnesota has a total functional shortage of nearly 1,000 physicians. Assuming that approximately 50 per cent of Minnesota trained physicians continue to outmigrate, *it would be necessary to train a total of 2,000 new physicians in order to retain the needed 1,000 in the State.* Seventy-four per cent of these doctors are needed in out-state areas which have a total of 53 per cent of the State's total population. Moreover, the need for specialists in these areas exceeds the need for personal physicians. The metropolitan area, while it enjoys a much better ratio of physicians-to-population, is nevertheless in need of 200 personal physicians. The Northlands report points out that "the estimated deficit of 200 personal physicians is probably low because it is based only on the indigenous population." In other words, this estimate does not include persons living adjacent to the metropolitan area, or even in outstate Minnesota, who seek the services of physicians in the metropolitan area. In spite of its concentration of specialists, moreover, the metropolitan area is short of allergist-dermatologists, obstetricians, otolaryngologists, and physiatrists. In summary, to close the existing gap between supply of physicians and demand for physicians' services would require the addition of 1,000 doctors, 55 per cent of whom should be personal physicians, in contrast to a need for 282 doctors if physicians were practicing in the specialties and locations where they are needed to fulfill the health care requirements of the people of Minnesota.

Federal Financing of Medical Education

In the course of its proceedings, it became evident to the Committee that medical educators are looking toward changes in the policies of the Federal Government which could have a profound impact on the training of physicians. Most significant, it would appear, is the prospect of extensive increases in the share of operational or training costs assumed by the Federal Government.

Action taken in response to recommendations contained in this Report and in the various proposals concerning medical education presently before the Legislature should take account of potential, as well as currently available, sources of Federal financing and the influence which new Federal policies and funding programs are likely to have on the future of programs under consideration. Careful thought should also be given to the degree of control the State and its medical education facilities are likely to relinquish or retain as these institutions become even more dependent on Fedral financing and the contingent conditions and regulations attaching to such funds. It seems useful, therefore, to present a brief review on the general trends in Federal support of medical education.

As expenditures for medical education have grown increasingly larger in recent years, the proportion of Federal support for medical education has also risen. For example, during the period between 1958 and 1966, total expenditures for medical education in this country rose 176 per cent. In that period, the share of Federal funds grew from 30 to 54 per cent, according to the Association of American Medical Colleges; during the academic year, 1965-66, Federal sources supplied $475,900,000 in grants, contracts, and subsidies for research and for training programs.

In addition to this rapid expansion of Federal financial participation in medical education, certain shifts have occurred in the manner in which these funds have been distributed, and in the basic conception of the Federal Government's role in medi- and prestigious national leaders concluded:

An exploratory conference composed of leading figures in medical education and health care, and prestigious national leaders concluded:

> "Until well after World War II, the Federal Government, except in its public health activities, limited its programs in the health field to those under which it assisted with financing but exercised little direct control. In recent years, Federal funds have flowed heavily into the support of medical research, the provision of medical and health facilities for precisely defined purposes and, perhaps most momentous, the training of health manpower.
>
> "The medical profession has generally resisted Federal programs which implied a compromise of the principle that decisions affecting medical service be made by the profession rather than by public officials and has been strenuously opposed to direct federal aid to medical students.
>
> "Medicare was the most dramatic breach, but several other programs enacted in the past four years represent significant changes in the precedent of the Federal Government's role as simply a mailer of checks."[11]

The conference report went on to single out such "landmark legislation" as the Health Professions Educational Assistance Act of 1963, which made construction funds available for new or expanding

schools of medicine, dentistry, and other health professions, for the explicit purpose of alleviating shortages of health manpower. The law also included provisions for low-cost student loans, and in 1965 the Act was amended to provide scholarship funds of up to $2,500 per year to enable students from low-income families to attend medical school.

Much of the impetus behind this move toward Federal subsidization of training programs may be traced to problems that arose out of the massive Federal funding of medical research following World War II.

Faculty members who are individually responsible for attracting large research grants to their institutions gain a high degree of influence and independence. This special status enables them to pursue their specialized and often narrowly circumscribed scientific investigations, and relegate teaching duties to a secondary place. It has been noted repeatedly that research thus comes to dominate the medical school and divert the faculty from pursuit of the primary goal of educating physicians. Further, it is contended that the prominence and prestige accorded to research exerts a powerful influence on the medical student's career decisions, leading him into highly specialized branches of practice or research and away from fields where acute shortages exist. It is also contended that the necessity to obtain matching funds from State and other sources, in order to qualify for Federal research money, drains off increasing amounts of operational money and weakens the schools' instructional programs.

A growing number of individuals and study groups have recently endorsed the idea of total Federal financial support for medical education, or, at least, for substantial increases in the level of Federal support. The Carnegie Commission on Higher Education reporting its preliminary findings in December, 1968, supported recommendations for broadened Federal support of medical education:

> "Medical and health services education is the one major subject area in higher education that the Carnegie Commission has singled out for specific Federal aid proposals. The reasons are several: the great needs of the nation in the health field, the growing public concern with these needs as evidenced by Medicare and the many state and local health programs, the high cost of medical training facilities, the fact that new medical education facilities are needed to serve geographical regions without reference to state boundaries, and, finally, the high mobility of medical school graduates, many and even most of whom do not remain to practice within the states that provided their instruction."[12]

The Carnegie Commission noted with approval the increasing levels of support which the Federal Government is devoting to medical school construction ($18 million in 1966-67 and $55 million in 1967-68), and to training ($42 million in 1966-67 and $53 million in 1967-68). However, the Report called for even more extensive funding to meet the heightened demand for medical care resulting from Medicare, and the critical needs of rural and urban ghetto residents, which the Report stated require the expansion of medical school graduates by 75 percent by 1977.

Since the specific recommendations of the Carnegie Commission are receiving strong support from leaders in medical education and in national health-planning agencies, and have already been embodied in a bill introduced in the U.S. House of Representatives (H.R. 6536), it may be of value to quote them at length:

> *Carnegie Commission Recommendations*
>
> *Student aid.* A student aid program for medical students should be adopted to provide grants on the basis of need in amounts up to $3,500 per year for four years, with free choice of institution.
>
> It should be noted that medical students also have access to loans under the expanded loan program recommended above.
>
> *Institutional payments.* Payments to institutions would be equal to the sum of the following amounts:
>
> 1. The institution's enrollment of students working toward the M.D. multiplied by $4,000
> 2. That portion of the enrollment working toward the M.D. in excess of such enrollment in the fall of 1966 multiplied by $2,000
> 3. The total number of residents and interns multiplied by $2,250, provided that no individual student shall be counted for more than four years, and provided further that the resident and intern program is conducted under the auspices of an accredited medical school either at its own or at an affiliated hospital
>
> The amounts in (1) and (2) above should be adjusted for medical schools with three-year

programs to enable those schools to receive the same amount of institutional aid as four-year schools.

Institutions would be free to use these institutional payments for support of any program which has as its major purpose the instruction of medical students.

Construction funds. Construction funds should be made available at the level of 100 percent for creation of new places, with additional funds for renovation and replacement.

Start-up grants. Start-up grants should be made available for non-construction costs for approximately 20 new medical schools at the rate of four per year for five years, not to exceed $10 million per school. These schools should be located in geographical areas not now adequately served by existing medical schools, with a sufficient population base to warrant a medical school, and with a university capable of providing a good environment for a medical school.

Community health service programs. Federal support should be made available for development of programs by medical schools designed to extend the availability and effectiveness of community health programs.

Training of support medical personnel. Federal funds should be made available for programs designed to increase the number of support medical personnel. Such personnel can be trained comparatively quickly and inexpensively. In some fields, such as pediatrics, they can assume a substantial share of the services now performed by M.D.s if they are given proper supervision by an M.D.

Level of funding. It is estimated that federal expenditures for the medical and health services education program outlined above would be:

YEAR	$ BILLIONS
1970-71	0.33
1971-72	0.35
1972-73	0.37
1973-74	0.39
1974-75	0.42
1975-76	0.40
1976-77	0.43

Summaries of Proposals

Six major proposals for new or expanded programs of medical education were presented to the Senate Interim Committee on Medical Education. They were submitted in response to the Position Paper and Requests for Proposals issued by the Committee in April, 1968. This position paper set forth our preliminary findings on Minnesota's physician manpower needs and sought to identify the objectives and priorities to which proponents of programs seeking State support should address themselves. The summaries which follow seek to present the major elements of each proposal and reflect as faithfully as possible within the limitations of a brief summary the spirit as well as the content of the respective proposals. In addition to the formal proposals presented in documentary form which are abstracted here, much supplementary information was supplied by the proponents in hearings held by the Committee. Hence, the summaries are intended to review the basic elements of each program for the purpose of convenient reference. The proposals in their entirety and records of supplementary information presented at the hearing are available in the Committee's official record of its proceedings.

Hennepin County General Hospital

Main objectives: To expand existing programs of undergraduate and graduate medical education; to establish a family practice program, and to introduce a program for the training of nurse-practitioners.

Background

The future of Hennepin County General Hospital (HCGH) is subject to some degree of uncertainty. This uncertainty concerning its form and function stems from a combination of factors — its aging physical plant; unresolved city-county relationships and changing patterns of health care. An extensive study of the hospital's prospective roles and relationships has defined four alternative possibilities:

Discontinuation of HCGH as a public hospital, with other community health facilities assuming the functions it now performs.

Continuation of HCGH in its present role and within its existing facilites.

The building of a new hospital in which HCGH would carry on its present function, with no change in the size of its operations or its program roles and responsibilities.

The building of a new hospital in which HCGH would operate a program based upon redefined roles and responsibilities.

While the final alternative appears to be the one most likely to be followed, its accomplishment will require selection of a location and the availability of capital funds, the latter being subject to the outcome of a county-wide referendum. At this writing, therefore, the issue of the future of HCGH remains unresolved.

The HCGH proposal takes account of this uncertainty and presents two alternative programs, one assuming the expansion of program within its existing physical facility (Plan I) and a second which assumes expansion of program within a new and larger hospital (Plan II). Both proposals project an increase in the number of physicians trained, but, as will be seen, the size of the increase varies considerably between one plan and the other.

The HCGH Proposal

Under Plan I, the number of Junior and Senior medical students in training at HCGH would increase from a present capacity of 71 to 107 under Plan I and to 176 under Plan II.

The rotating internship program would expand from a present capacity of 48 to 64 under Plan I and to 81 under Plan II.

The residency program would expand from a current capacity of 74 positions to 97 under Plan I and to 124 under Plan II; 24 positions would be reserved for family practice residents.

Annual cost estimates for Plan I are $681,821 for the graduate program and $293,632 for the undergraduate program, or a yearly total of $975,453. These estimates exclude the nurse practitioner program. The Table shows how costs would be allocated. While comparable figures for Plan II were not supplied, these estimates indicate the general magnitude of the costs of the HCGH program.

Implementation of the HCGH program would call for: The addition of 14 full-time and five part-time faculty members, under Plan I; 23 full-time and 16 part-time staff members under Plan II; Replacement of the existing HCGH facility with a new 600-bed hospital. (Required for Plan II only.) This proposal

does not request State funds to finance construction costs.

ITEM	GRADUATE PROGRAM	UNDERGRADUATE PROGRAM	TOTAL
Full-Time Staff	$222,703	$222,703	$445,406
Part-Time Staff	40,265	40,265	80,530
Residents	277,116		277,116
Interns	141,737		141,737
Junior Students		11,694	11,694
Senior Students		18,970	18,970
TOTAL	$681,821	$293,632	$975,453

HCGH presents the following facts and contentions in support of its proposals:

The hospital has well established educational programs which are fully accredited

. . . has demonstrated impressive ability in attracting students

. . . receives 235-250 applications annually for the 48 internship positions offered

. . . has filled all internship positions it offered every year since 1953

. . . has obtained its interns from 42 different medical schools in 26 states and Canada (1960-68)

. . . attracts physicians whose primary interest is in medical practice, and has been a major source of practicing physicians for Minnesota. 47.2 per cent of the 898 interns and residents produced by HCGH (1960-68) established practice in Minnesota. 30 per cent of these M.D.'s received their undergraduate medical education outside of the state

. . . has won wide community acceptance and confidence through the excellence of its medical services despite the intensified demands generated by Medicare, and the increasingly crowded and obsolete conditions of the hospital's physical facility. Its patient load has increased an average of 5 per cent to 7 per cent annually in the last five years

. . . enjoys a close and long-standing working relationship with the University of Minnesota Medical School which enhances the quality of its programs and the ability to attract graduate physicians. (HCGH faculty have faculty appointments with the University of Minnesota and its graduate programs are affiliated with the University of Minnesota for accreditation.)

. . . provides the clinical training for nearly one-fourth of all University of Minnesota medical students in their Junior and Senior years, and provides some training for additional University of Minnesota residents

. . . offers clinical experience with a diversified patient population, representative of patients seen in private practice, providing an appropriate clinical training experience for the practice of medicine

. . . provides a comprehensive range of health care services and facilities, including many highly-specialized services that are unique in the area (e.g., hyperbaric chamber therapy, chronic hemodialysis facility, etc.)

. . . has established a comprehensive neighborhood health care center in a Minneapolis poverty area which will add highly relevant clinical experience to its educational programs.

PROPOSED MAYO MEDICAL SCHOOL, ROCHESTER

Main objectives: To establish a four-year Mayo Medical School in Rochester, involving innovations in health care delivery and organization, and programs of education for allied health personnel.

Background

The Mayo Institutions are a diverse, but interrelated complex of units, the principal components being the Mayo Clinic, a medical care center staffed by a multi-specialty group of nearly 500 physicians, which provides health care to more than 150,000 patients annually, and the Mayo Foundation, which sponsors programs of research and education.

At Mayo, educational programs are conducted at all levels, with approximately 800 physicians currently in graduate training, in addition to those enrolled in various undergraduate and special educational programs. A progressive expansion of educational programs is now underway, including the inauguration this year of an internship program.

The decision to proceed with plans directed toward development of a four-year Mayo Medical School was made in November of 1968.

The Mayo Proposal

The Mayo proposal outlines a program which includes:

> . . . a four-year program leading to an M.D. degree.
>
> . . . enrollment of 40 students per class at the outset.
>
> . . . acceptance of its first class in September, 1970.
>
> . . . detailed study of education in the allied health sciences, for the purpose of delineating the appropriate nature and degree of Mayo institutional involvement in allied health sciences education.
>
> . . . programs of delivery of medical care, consisting of units for delivery of the finest medical care by intelligent use of all varieties of physicians and allied health professions, placed in settings which will facilitate their efforts by making optimal use of modern instrumentation and technology.

The Mayo proposal indicates that implementation of its program would be conditioned upon:

> . . . an exploration in depth of suitable academic affiliation, with reasonable autonomy, for the Mayo Medical School, or alternatively, of its independence as a recognized degree granting institution.
>
> . . . assurance of financing, with minor exceptions, by funds to be raised from public and private sources not now part of the Mayo Foundation's income and capital flow.

Financing

Annual operating costs for the proposed School, assuming full enrollment of 160 students, is estimated to be $2,622,724, or approximately $16,000 per student year.

The Mayo Institutions are attempting to raise an endowment of approximately $30 million dollars, or an endowment equivalent annual income of similar proportions, to underwrite about half of the annual operational costs. It is proposed that the other half be provided by annual support primarily from public sources.

Capital costs for construction of research-laboratory buildings, required for third and fourth year medical students, are estimated to total approximately $12 million, which would be sought from various public and private sources.

Financial estimates contemplate the recruitment of 38 full-time equivalent (FTE) faculty persons and the additional administrative staff to implement the School.

The Mayo proposal cites the following resources and relationships as forming the foundation of an undergraduate school:

> The Mayo Graduate School of Medicine has enjoyed affiliate status with the University of Minnesota since 1915, and its 35 residency training programs are affiliated with, and accredited by, the University.
>
> The Mayo Clinic staff includes 481 physicians who hold regular faculty appointments from the University of Minnesota, and a competent administrative staff directs existing educational programs.
>
> The Mayo Institutions have exclusive access to more than 1,500 beds in St. Mary's and Methodist Hospitals in Rochester for the inpatient care of Clinic patients, and as teaching hospitals for existing educational programs. In addition, patients and facilities of the 800-bed Rochester State Hospital are utilized in a number of Mayo residency training programs.

Space and facilities for education are extensive and located throughout the Mayo Clinic and associated structures. The Mayo Medical Library occupies five floors of the Plummer Building, and maintains a collection of more than 150,000 books and bound journals.

There are 786 Fellows (residents, graduate scholars, and special fellows) currently registered in the Mayo Graduate School of Medicine's 35 training programs. This registration has steadily increased over the past several years, and is 62 per cent higher than 10 years ago.

The Mayo Institutions also conduct various undergraduate and special educational programs, and training programs for allied health personnel.

NORTHERN ASSOCIATION FOR MEDICAL EDUCATION

Main objective: A proposal to establish a four-year medical school in St. Paul, oriented toward the production of primary physicians involving a network of statewide clinical facilities.

Background

The Northern Association for Medical Education (NAME) was organized in 1958 by a group of physicians for the purpose of fostering measures to meet the State's future need for physicians. This led to the proposal that a second medical school be established in St. Paul. While its membership is composed primarily of doctors and civic leaders in St. Paul, NAME's membership of over 500 includes physicians and others from out-state Minnesota and adjacent areas.

The NAME Proposal

The NAME proposal calls for the establishment of a second medical school centered in St. Paul, which would:

Operate a full four-year program with 64 students per class (expanding to 90 students per class as soon as possible.)

Orient its program toward the education of physicians for primary practice in Minnesota.

Develop a network of statewide clinical facilities connected electronically in order to give students exposure to the private practice of medicine in a variety of settings, and supplement the services of the private practitioner, furnishing more health manpower in the area.

Produce its first M.D. graduates eight years after the start of active planning.

Include educational programs for allied health personnel.

NAME requests a one-time State appropriation of $500,000 for program planning, land acquisition, architectural planning, and related costs. NAME would match this amount with funds obtained from other sources. In addition NAME requests appropriations for operational costs, determined on the basis of a formula grant of $6,000 per student enrolled, per year. Capital costs for establishment of the medical school would be raised from private sources and federal government grants.

Implementation of the NAME proposal would involve the following:

Negotiation of a formal academic affiliation through a relationship with a group of local colleges to form a graduate university whose governance would oversee the management of a new medical school, or through a relationship which would take advantage of the desirable governance of the University, while still maintaining the independence of a second medical school. NAME's position is that it is willing to relinquish any vested interest in the governance of the second medical school in consideration for the assurance that its concepts of independence and new departures for the education of doctors for people be maintained.

The NAME proposal also contemplates construction or acquisition of a physical facility to house its basic sciences program.

The medical school proposed by NAME would promote primary medical practice by:

Early initiation of clinical teaching in the basic sciences curriculum.

Teaching with private patients using facilities in community hospitals, clinics, and doctors' offices and by use of a large volunteer faculty coordinated by the full-time faculty through a multi-disciplinary approach.

Rotation of students and faculty throughout the State for clinical experience in a network of various practice settings.

Research emphasis of the school would center on the development of health care delivery methods and patterns of organization.

Attracting and selecting students interested in family practice who would be willing to agree to practice in our rural communities or in urban ghettos for a period of not less than two years upon completion of medical school.

NAME estimates that it would expect that 80 per cent of its graduates could be retained for practice in Minnesota.

Development of a "medical center core" based on agreements with existing hospitals which would serve the medical school as teaching hospitals.

NORTHERN MINNESOTA COUNCIL FOR MEDICAL EDUCATION

Main objectives: To establish a four-year medical school on the campus of the University of Minnesota, Duluth, (UMD) specializing in the preparation of primary physicians, and incorporating collegiate programs for several of the allied health professions.

Background

The Northern Minnesota Council for Medical Education (NMCME) represents a group of physicians, educators, and civic leaders dedicated to seeking ways and means to improve the supply and delivery of health care to the citizens of Minnesota. Organized by a small group of Duluth physicians in 1966, the Council was expanded in 1967 to include representatives from various communities in northern Minnesota. Since its inception, the Council has worked closely with representatives of Minnesota administrators. Dean Robert B. Howard and President O. Meredith Wilson were the first in the University to know of the Council's activity in Duluth.

The program outlined by NMCME follows closely the recommendations and developmental schedule outlined by the University's Board of Regents on April 19, 1968, which called for the following:

Establishment of the graduate programs in chemistry and biology sufficient to provide the University base for medical school development.

Establishment of collegiate programs in medical technology, physical therapy, occupational therapy, nursing, and other allied health professions.

Planning toward development of a pre-clinical (first two years) program in medical education in Duluth in the decade of the 1970's.

Planning toward development in the 1980's of a clinical program in medicine.

The NMCME Proposal

The establishment of a four-year medical school at the University of Minnesota, Duluth, would involve two initial steps:

Establishment of graduate programs in chemistry and biology sufficient to provide a university base for medical school development. (1969-1970) Establishment of collegiate programs in medical technology, physical therapy, etc. (1971-1973).

Development of a basic sciences (pre-clinical) program of medical education, with enrollment of the first class in 1975.

The Medical School proposed by the NMCME would formally accept its first clinical students in 1981, and would:

Enroll four classes of 64 students, producing its first M.D. graduates in 1983.

Concentrate on the production of medical practitioners, and would make considerable use of a part-time faculty enlisted from the ranks of physicians in private practice in Duluth, and include physicians' offices and other settings for supplementary clinical training.

Implementation of the proposed medical school would require the financing and construction of physical facilities. The requested State share of these building costs is estimated at $13,000,760. Total capital costs are estimated at $30,200,000. (For details see Table below).

Facility	Construction Date	Cost of Construction	State Share of Costs
Basic Sciences	1973-75	$10,700,400	$ 4,708,766
Clinical Sciences	1979-81	3,330,000	1,110,000
University Hospital	1979-81	12,600,000	4,200,000
Administration	1981-83	3,570,000	2,982,000
TOTALS		$30,200,000	$13,000,766

Financial support for preliminary planning and development of basic sciences, collegiate programs in allied health fields, and the proposed medical school would require an estimated $6,231,800, with the requested State share set at $4,598,850. (See Table below).

Activity	Scheduled Date	Estimated Cost	State Share of Cost
Strengthen basic sciences; plan allied health programs	1969-71	$ 590,400	$ 442,800
Medical School planning & development	1971-73	909,000	681,750
	1973-75	1,522,800	1,142,100
	1979-81	3,700,000	2,775,000
TOTALS		$6,231,800	$4,598,850

Costs of operational support for the medical school and related allied health professional training programs (at full enrollment) are estimated as follows:

Annual operating costs—medical school and allied programs: $3,700,000
(Starting in 1982, and including 256 medical students and 200 students in allied health programs.)
Less annual income from tuition, medical services, grants: $1,908,000
State share of annual operating cost: $1,792,000
(Biennial costs:
$1,792,000 x two = $3,584,000)

THE UNIVERSITY OF MINNESOTA

Main objectives: To expand existing programs of medical education on both undergraduate and graduate levels, and to establish a family practice residency program. The proposal also describes curricular revisions soon to be inaugurated.

The College of Medical Sciences Proposal

The University of Minnesota proposal contains a "package" of six different programs that are arranged under three categories:

Category A

These programs are designed to increase the number of students admitted to and graduated from the University of Minnesota Medical School.

Program I — Expansion of the entering class size from 160 to 200, beginning in 1974.

Program II — Expansion of the number of students accepted by transfer from the two-year medical schools in North and South Dakota, from the present average of six to ten students to 25 students annually, starting in 1971.

Program III — Establishment of an accelerated program of undergraduate medical education permitting graduation in three instead of four years.

Following the first four or five years, this would result in the graduation of the equivalent of one extra class of medical students, or approximately 160 students. (This would be a one time effect; students entering the three-year program in 1970 would graduate at the same time as those completing the present four-year course after entering in 1969. Thereafter, the size of the graduating class would return to normal.)

Category B

This program is designed to increase the number of attractive opportunities for graduate medical education.

Program IV — Expansion of programs in graduate medical education from the present capacity of 600 to a total of 690 positions — an increase of 90 positions. 30 positions are to be added each biennium starting in 1969.

Category C

These programs are designed to alter the nature of the medical education program.

Program V — Revision of the Medical School Curriculum in response to trends in medical educational programs and methods, developing trends in medical care and practice, current developments in American medical education, and expressed needs for more physicians, especially family practice physicians in the State of Minnesota. The proposed revisions are:

Identification of a "core" curriculum of essential medical knowledge presented to all students as essential medical background before they diverge into specialization pathways.

An "elective track system" to permit advanced medical students to pursue their special interests during the last year and one-half of medical school.

Emphasis on the importance of self-education and continuing medical education.

Greater emphasis on encouraging humanity and understanding in the future physician, through extensive opportunity for early contact of students with patients, and clinical education in a setting placing emphasis on under-

standing of social, psychological, and economic, as well as medical aspects of human problems.

Fostering closer relationships between students and faculty by establishment of a workable faculty-advisor system.

Closer integration and connection of the concepts and content of basic medical science with clinical teaching.

Increased flexibility and tailoring of the curriculum to the educational and professional needs of the individual student.

Program VI — Establishment of a program in family practice and community health, to be implemented in July, 1969, which will provide 15 residency positions and 5 internships in this field.

Implementation of the University of Minnesota proposed programs is predicated on the following:

Increasing the level of basic state appropriations for the medical school to "standard."

The present level of support is reported to be $4,972 per student per year. Medical school officials have requested that per capita annual appropriations from state funds be raised to $11,000.

Construction of additional capital facilities as outlined by the University in its Health Sciences Complex proposal:

The Health Sciences Complex would create approximately one million square feet of space through construction and remodeling projects during the next three biennia, the cost of which would total more than $67 million.

During 1969-71, construction costs total $28.3 million, approximately $13.5 million of which is expected to come from various Federal funds, and the remainder from state-appropriated funds.

Expansion of clinical teaching capacities of affiliated hospitals such as Hennepin County General and St. Paul-Ramsey, which already provide clinical training for the majority of undergraduate and graduate students enrolled at the University's College of Medical Sciences.

PROJECT HEALTH

Main objective: To establish an action model for the development of prototype demonstration patterns for the planning and distribution of medical and health care to the rural areas.

Background

Project HEALTH (Health Extension and Learning Through Help) is based upon findings of a study of rural health care in Minnesota. This study was conducted by the Program in Hospital Administration of the University's School of Public Health, in response to a legislative request for such information. Under the direction of Professor Bright Dornblaser, investigations were conducted along a broad front of relevant factors, including:

The curriculum of the medical school — its impact on the medical students attitudes towards family practice; and also on where the students plan to practice medicine.

How the people of non-metropolitan communities of Minnesota—the lay leaders, the doctors, the consumers—view the needs for medical and health care, and the best ways to meet these needs.

The forces, particularly economic, that may be causing the centralization or concentration of community services, including health services, throughout Minnesota.

The development of a model for improving medical and health care services in rural Minnesota based upon the findings of this study.

The health care problems identified in these studies provide the focus for the program that has been tentatively outlined by the School of Public Health. Project HEALTH is portrayed as an expression of "a commitment by the Health Sciences Center and the University generally, to a 'communiversity' responsibility for improving the health care of the citizens of rural Minnesota." It is patterned after the agricultural extension program, which has effectively linked the University's academic and scientific mission through services in rural Minnesota.

The Project HEALTH Proposal

Project HEALTH proposes the establishment of links between the University's Health Sciences Center and Minnesota's rural communities. The primary mission of Project HEALTH would be to extend quality health care services to the rural areas, while providing learning opportunities for faculty, students, and the community, through partnership in projects to help resolve community health care problems. The program is conceived as an additive, complementary program rather than one which is a replacement for, or competitive with, existing programs.

Solutions to rural health care problems identified by the study already completed, as well as to those as yet unknown, would be found by means of decentralizing the resources of the Health Sciences Center. The program envisions Regional Health Stations, analogous to agriculture experimental stations, which would assist rural communities in finding new methods of resolving community problems. Just as Agriculture Experimental Stations have a basic, permanent faculty, plus main campus faculty moving in and out, so will the Regional Health Stations. The faculties will include social scientists, including economists, and lecturers, concerned with the health implications of the individual inter-activity with the environment. These stations will include the specialized facilities and personnel needed to support the medical specialists in Minnesota's medium-sized cities. Further decentralization of the extension services of the Health Sciences Center would be accomplished by Community Health Units in smaller communities surrounding the Regional Stations.

It is proposed that such a service may most appropriately be operated by the State Health Department. The Department's budget should be augmented to permit such service. The University would be responsible, however, for developing an effective, continuing partnership with the operating organization to assure the effective communication which would make the integrated Health-Help system work effectively. The Health Sciences Center and University Project Health Mission is not to provide service directly beyond that needed to learn how to help others provide such services and for teaching purposes. In pilot projects it will need to provide integrated services from the Health Sciences Center to the full extension into the community. The objective will be to develop prototypes of two way communication and service chains from teaching centers to the community, and to encourage other organizations to develop such chains. Each service, teaching and research chain developed should be anchored in the Health Sciences Center, directly or through affiliated teaching organizations. Effective continuous infusion of new knowledge into the health care system from the Health Sciences Center, and communication to the center of problems needing resolution, is clearly essential.

The organization of Project HEALTH is described as follows:

> Major responsibilities for planning, operating and evaluating the Project would be assumed by the University Hospital and the School of Public Health.
>
> The Schools of the Health Sciences Center would provide consultation and advice, and adapt "the training programs to utilize the rural demonstration units of Project HEALTH."
>
> A Bureau of Health Services Research would be cooperatively developed by the School of Public Health and the Center for Urban & Regional Affairs to "assist in the planning and perform the evaluation of the patterns of health care demonstrated by Project HEALTH."
>
> The University Hospitals "would establish and operate the Regional Health Stations and Units as decentralized University Hospital stations directly or through affiliations agreements."

Costs of Planning and Operation of the Program

The costs of carrying out Project HEALTH are estimated to be approximately $500,000 per year.

The proposal points out that there are several potential sources of Federal funds for this program and indicates that these are being sought. Developmental funds provided by State appropriations could be expected to encourage an early allocation to the State of Minnesota of increased Federal funding for health professional education, and can permit the State to begin the process of resolving the pressing rural health care problems.

MINNEAPOLIS MEDICAL CENTER, INC.

Main objective: To develop a joint residency program in pediatrics and internal medicine leading to eligibility for certification in both specialties, and other educational programs.

Background

The Minneapolis Medical Center, Inc. (MMCI) is an emerging health care complex formed by five institutions: Kenny Rehabilitation Institute, Lutheran Deaconess Hospital, Mount Sinai Hospital, Northwestern Hospital, and the still to be constructed Minneapolis Children's Hospital. The hospitals are located within a half-mile radius. They have a combined capacity of 1,033 beds. MMCI is pursuing plans for development of joint services and facilities, under a policy whereby member institutions retain their autonomy, and participate on a voluntary basis. The primary reason for the creation of MMCI is to achieve greater comprehensiveness and quality of care by the centralization of health care resources and to achieve efficiencies and economies through the pooling of scarce personnel and costly equipment.

The MMCI Proposal

The proposal presented by the MMCI institutions outlines the following program:

Establishment of a joint Pediatric-Internal Medicine residency program leading to joint certification and emphasizing the care of families. Initial output of this four-year graduate program would be 10 to 15 graduates annually.

Didactic instruction dealing with recent scientific developments related to medical practice, and reviews of information covered in undergraduate medical education, for residents in MMCI graduate programs, which would also be open to all medical residents in the Twin Cities.

Annual reviews of the major medical specialties, available to affiliated medical students, graduate and undergraduate, and practicing physicians.

Implementation of the program, the MMCI proposal states, would involve the following:

Formal development and organization of a Medical Center faculty to provide leadership for the training of resident physicians within the Center, through obtaining a Director of Graduate Medical Education who would have supra-institutional responsibility and authority for the cooperative educational programs conducted by the MMCI hospitals, and formation of a Council on Medical Education, composed of the Directors of Medical Education from each MMCI institution, with policy and planning responsibilities for the coordinated programs.

Utilization of the 1,000 beds of the MMCI member hospitals as the major teaching center.

Coordinated utilization of existing resources for education in MMCI member hospitals as the nucleus in development of the proposed program. Present resources include:

45 full-time M.D.'s with primary responsibility for medical education, and more than 200 staff M.D.'s with clinical appointments from the University of Minnesota.

Existing educational and research programs with a total annual budget of $4 million.

Supporting facilities including closed-circuit television and video-taping facilities, four medcal libraries with inter-library loan arrangements with all medical libraries in the area, a full-time audio visual director, classroom space, and other resources.

Development of a cluster of clinical training centers in both rural and urban locations in which qualified physicians could be certified as clinical faculty to oversee the training of residents.

Satellite training facilities would be representative of the various organizational patterns and geographic locations that characterize medical practice.

Development of a comprehensive ambulatory health care clinic in the Minneapolis Model Neighborhood.

Development of new modes of organization and delivery of health care services.

Development and promotion of an effective recruitment program to attract American educated physicians to Minnesota.

Additional Statements

The Senate Interim Subcommittee on Medical Education has received two additional statements from Fairview and St. Mary's Hospitals, Minneapolis, and from St. Paul-Ramsey Hospital and Medical Center. While both statements follow the format suggested by the Senate Committee, neither are formal proposals. Neither proposes a "free-standing" program of education, nor requests a State appropriation. Both institutions propose programs of clinical affiliation with the University of Minnesota College of Medical Sciences, and would automatically be implemented (for the most part) by implementation of the University of Minnesota proposal.

These two statements are of interest because of the additional information and insight they provide relative to the University of Minnesota proposal. The statement submitted by St. Paul-Ramsey Hospital proposes a gradual expansion of its present clinical programs in anticipation of the establishment of a four-year medical school in St. Paul.

The paper submitted by Fairview and St. Mary's Hospital is essentially the declaration by these two hospitals (now merging into a hospital complex) of their willingness to offer their clinical facilities and teaching personnel to the University of Minnesota Family Practice residency program as an affiliated clinical teaching setting.

FSM would implement this involvement with the University of Minnesota's Family Practice program as follows:

> The Fairview-St. Mary's program would be coordinated with, and an integral part of the University of Minnesota's Program in Family Practice and Community Health.
>
> The Family Medicine Clinic of Fairview Hospital will provide the basic office practice phase of the program. Additional clinical teaching would be conducted using the more than 1,000 beds in the two hospitals on a selected basis, to supplement the hospital experience of participants in the program. General practitioners and specialists, in clinical practice, will be involved in the supervision of the program, as a continuing impetus for entering the field of family medicine.
>
> Programs of Public Health nursing, social work, and clinical psychology will be strengthened and developed to involve these paramedical fields in aiding the physician to conserve his time.
>
> At the beginning, the hospitals anticipate having four or five Family Practice residents in its clinical program.

The statement prepared by the medical staff of St. Paul Ramsey Hospital and Medical Center outlines the resources of that institution which make it a desirable setting for clinical medical education, which could be progressively expanded into an accredited medical school. The University of Minnesota Regents' Plan for medical education contained statements pertinent to this projected program:

> "The Regents consider Step I (of the University of Minnesota's expansion proposal) . . . as the necessary basis for further development of clinical education and residency programs in the St. Paul-Ramsey Hospital under circumstances which could lead to the creation of a major Division of the University of Minnesota Medical School in St. Paul."

The Regents went on to recommend that Step II should consist of:

> "Establishment of a clinical training program in SPR for 100 undergraduate medical students and a like number of residents . . . They (the Regents) envision the development of a teaching hospital with visibility, identity, and substantial autonomy in the conduct of clinical education programs."

However, the Regents' statement does not explicitly recommend the ultimate establishment of a separate medical school in St. Paul. While the statement submitted to the Senate Committee by St. Paul-Ramsey may, therefore, go beyond the intentions of the Regents, the proposal may nevertheless be regarded as an expression of its concurrence with the Regents' plan. The hospital outlines its proposed expansion program according to the following schedule:

> Phase A — (1969-1971), increase the number of full-time faculty members from 33 to 50.
>
> Begin to financially compensate attending staff members for time spent in medical education.
>
> Selection of a dean to administer and coordinate the overall program. Increase the number of residents to 60 in July, 1970, and to 70 in July, 1971. (The hospital has 47 residents at present.)

Develop cooperative programs with other hospitals in St. Paul.

Increase the number of undergraduate medical students to 80 by July, 1970. Alter existing physical facilities to accommodate an expanded Ambulatory Care clinic.

Begin planning involving land acquisition, architectural planning, and curricular development.

Phase B — (1972), Begin construction of additional educational facilities.

Phase C — (1974-1978), Increase the total number of medical students to 120. Recruitment of a Basic Sciences faculty, and provisional accreditation for a new College of Medicine of the University of Minnesota.

The St. Paul-Ramsey statement makes it plain that the major objective of its programs of medical education is to produce practitioners of medicine, and that its clinical design would bear close resemblance to the private practice of primary medical care.

A Crisis of Distribution

What is repeatedly referred to as the medical manpower crisis appears to be largely a crisis in the distribution of medical manpower. Findings reported by the Northlands Regional Medical Program suggest that the random distribution of physicians, according to type of practice and location, is chiefly responsible for shortages of health care in Minnesota. It can be inferred from these findings that if Minnesota physicians were distributed across the various specialties on the basis of health care needs, the present shortage would be about 300 physicians. By contrast, the prevailing patterns of random distribution have contributed to a present shortage of nearly 1,000 physicians. If these patterns of random distribution persist, not even an additional 2,000 physicians will close the gap in Minnesota.

The Cost of Maldistribution

Medical education ranks as the most costly form of higher education. However, the Committee has encountered great difficulty in identifying the respective costs assignable to capital expenditures as distinct from operating expenditures (or training costs), and in relating these to the cost of training per medical student.

Based upon the thorough cost analysis contained in the Mayo proposal, it can be estimated that the cost of a four-year undergraduate medical training program is $64,000 per student. This figure represents operating or training costs only. If capital costs are added, the total cost per student for four years of undergraduate training approaches $100,000. Add to this an estimated cost of $50,000 for postgraduate training of a physician retained in Minnesota, and the total cost of adding one physician to the State's medical manpower complement approaches $150,000. Assuming that it is necessary to increase Minnesota's supply of physicians by 2,000 to alleviate existing functional shortages created by maldistribution, as indicated in the preceding survey of Minnesota's physician needs, (See pages 7-16) the total cost of closing the gap could reach as high as $300 million. The wastefulness of maldistribution is forcibly illustrated when this sum is contrasted with the cost of training 282 additional physicians, the number needed if optimum distribution of medical manpower could be achieved. The sum would be less than $35 million compared to $300 million. It is admittedly difficult, if not impossible, to achieve an ideal balance in the distribution of physicians in terms of type of practice and location. Nevertheless, these calculations dramatize with sobering force the enormous costs imposed on society when physicians choose a type of practice and a location without reference to the needs of society.

Unwelcome Alternatives

The Committee has sought diligently to elicit proposals aimed at redressing the exorbitantly costly imbalance in the distribution of physicians. However, none of the proposals for expanded programs of medical education addressed itself specificially to this problem. Some states have resorted to so-called "indentured service" programs under which medical students assume a contractual obligation to practice in a specified area in return for financial aid. Even if these attempts had proved successful, which they apparently have not, the Minnesota Legislature has shown a traditional reluctance to employ measures which in any way abrogate freedom of choice. At the same time, the Legislature cannot condone tax expenditures of a magnitude of hundreds of millions of dollars to correct what is essentially a problem of distribution resulting from a disregard for the health needs of the state. Unless positive alternatives are brought forward, the Legislature, in order to protect the public interest, may eventually be faced with the necessity to adopt measures it nether welcomes nor approves.

The Challenge to Medical Education

While the Legislature has neither the competence nor the authority to specify solutions to problems in the domain of medical science, it can challenge the medical profession and institutions of higher learning to employ their intellectual resources and ingenuity to devise methods which render corrective action from outside medicine unnecessary.

The public is becoming increasingly intolerant of a medical care system which is incapable of delivering needed care despite increased health expectations and increased ability to pay for medical care. If health care deficits cannot be remedied through the medical education system, they will certainly be fulfilled by some other means. Elsewhere in the United States, new forms of medical care organization and delivery are being

proposed and tested — prepaid group practice plans centered in medical schools; regional group practice centers; medical centers utilizing assistant physicians to provide front-line medical services in less populous areas; advanced communications systems linking rural medical centers with major metropolitan medical centers. In response to specific requests for proposals aimed at improving the distribution of medical manpower and medical services in Minnesota, the Committee received recommendations which, with two minor exceptions, were confined exclusively to conventional and traditional approaches to medical education. This dearth of innovative proposals prompted the following comment by Dr. Rashi Fein, a medical economist serving on the Committee's Panel of Expert Advisors:

> "If the state of Minnesota is concerned with the quality of care, with the number of physicians, with the types of people that they see with family practice and matters of this kind, it might be well advised to consider utilizing its constrained budget to establish new patterns of organization and new structures for the delivery of medical care. This would be particularly necessary in the rural and outlying areas of the state, although it would also have to be undertaken in the inner city. No proposals were received that would really develop a system of care where none exists, that would really alter the delivery system or medical practice and organization. This is regrettable."

Encouraging Innovation

It is indeed regrettable that proposals aimed at devising new organizational forms and medical care delivery systems have not been put forward. The proposal for a Mayo Medical School in Rochester does hint at a possible program of this type. The Mayo proposal refers to the possibility of establishing affiliated group practice centers in rural areas which lack adequate medical services. It is assumed that physicians could be recruited and trained by the Mayo organization to staff these peripheral centers, thus assuring the recruitment and training of physicians according to high standards of excellence.

The Project HEALTH Program developed by the University of Minnesota School of Public Health also includes recommendations that would afford opportunities for undergraduate and graduate training in rural areas, together with the provision of needed health care services.

It is too early to say whether these specific programs will produce the desired results. The recommended appropriations of funds for their development are intended to encourage experimentation with apparently promising methods of balancing the distribution of physicians and needed medical services. The want of proposals recommending new and innovative approaches to medical education and medical care is not, in the Committee's view, attributable to any lack of ingenuity, imagination or resourcefulness on the part of medical educators. It is no doubt chiefly due to a hesitancy to propose innovations which might arouse controversy by disturbing established patterns of medical care. Considering the critical nature of the problems at issue, it is most regrettable that distinguished medical leaders should be reluctant to openly discuss and test new concepts, however controversial. The purpose of the recommended support of the Mayo peripheral centers and the Project HEALTH program is to encourage open discussion, as well as development of new organizational forms of medical care. Without professing to any expert knowledge of the merits or potential results of these programs, the Committee feels that the Legislature, and the people of the State, should have the benefit of programs that make it possible to test various alternatives in the organization and delivery of medical care.

Minnesota medicine has displayed no lack of resourcefulness, and even daring, in advancing the scientific frontiers of medicine. The University of Minnesota College of Medical Sciences and the Mayo institutions are centers of international renown. Patients from every corner of the world come to these centers for life-saving procedures; physicians trained here go out from Minnesota to win world-wide acclaim. It seems reasonable to expect that these achievements should be matched by efforts which, in their own way, are equally daring and resourceful, aimed at assuring the people of Minnesota ready availability of the less dramatic, everyday health services when and where they need them.

"A National Market for Physicians"

While the Committee has placed primary emphasis on the production of physicians to meet the State of Minnesota's need for medical care, it is also cognizant of Minnesota's importance to the nation as a source of medical manpower. The benefits produced by Minnesota medical education, it is understood, are not confined to Minnesota. However, considering the cost of medical education, the

people of Minnesota cannot be expected to assume the total burden for financing its conduct.

As Dr. Rashi Fein noted in his report as a member of the Expert Advisory Panel:

> "Further, given the fact that there exists a national market for physicians, it is by no means clear that this training can be financed by individual states with assurance that they will receive an adequate return on their investment. As is well known, this is one of the important arguments for Federal support for medical education. The Federal Government, of course, does already support educational institutions and their research activities, but it does not adequately support the educational process itself."

In this respect, it should also be noted that the report of the Northlands Regional Medical Program, ("Parameters of Medical Practice and Their Significance") stated as one of its major conclusions that "Minnesota has unique potential for developing prototype solutions to health care needs".

With the future prospect of substantial Federal funding of the operating costs of medical education, it seems advisable for Minnesota to develop as fully as possible its unique resources for medical education. The availability of Federal funds will greatly increase the scale of financing of medical education. Such funds will tend to be concentrated in programs that offer the potential for meeting the special needs of today's medical care crisis.

In recommending State support of an array of medical education endeavors, it is the Committee's intention to provide funds to further the development of the State's varied educational resources, looking toward the possibility of attracting substantial amounts of Federal funds in the future. Proponents of various sites for the location of a second medical school have stressed the value of such an educational center as a contribution to economic development. It is possible to think in terms of medical education in Minnesota as a phase of the burgeoning knowledge industry which could contribute substantially to the economic development of the entire state.

Assessing the Costs of Medical Education

In its original request for proposals, the Committee asked for data which would relate the cost of projected programs to the anticipated output of medical manpower for Minnesota, in short, a cost-effectiveness analysis of the recommended measures for expanding medical education. In examining the proposals and in hearing supplementary testimony, it became apparent that cost accounting practices prevalent not only in medical education but in higher education generally are not amenable to such analysis. This finding underlies the recommendation that a number of programs should be funded on a per student basis. It is to be hoped that this step will stimulate medical educators to devise methods of presenting budgets in a form which makes it possible to clearly identify costs which are assignable to capital costs, operating costs, and to relate these costs to such factors as rate of retention, choice of practice and location of practice.

It seems appropriate to interject the comment that in 1969 the Minnesota State Legislature received requests for a total of one-half billion dollars to finance higher education in state and junior colleges, as well as the University of Minnesota. Decisions involving expenditures of this magnitude must of necessity be considered, studied and acted upon within the space of the crowded, demanding biennial Legislative session. This is a grave responsibility. Every effort should be made to assist deliberations leading to such momentous legislative decisions.

In attempting to discharge its task as conscientiously and responsibly as possible, the Committee has sought to subject the proposals for expanded programs of medical education to rigorous analysis. In the process, it became apparent that the data supplied in support of requests for legislative appropriations provide less than satisfactory guidelines for determining with any degree of exactness the need and justification for the requested funds.

The recommendation that the Legislature create a special commission to study medical education costs and benefits is aimed at resolving this problem. This proposed Legislative study group would seek to stimulate the development of methods of presenting appropriation requests and budgets for medical education in a form which makes it possible for the Legislature to properly assess the manner in which financial needs are determined and the probable benefits to be gained by the State from its investments in the training of physicians. The problem of cost analysis was less serious in past years, when the magnitude of such requests was significantly lower. Today, higher education represents the State's largest single area of expenditure. Since medical education represents the most costly form of higher education, it would seem the logical starting point for the development of such a budget and cost analysis system.

Graduate Education

The Committee's inquiries have shown that:

While the costs of medical education are considerable at all levels, graduate programs (residencies) may be only about half the cost of undergraduate programs in adding to Minnesota's complement of physicians in practice.

There is considerable evidence to suggest that doctors tend to establish practice in the area where they have received their graduate education.

These findings are regarded as highly significant, and are borne out by the previously cited study of medical practice in Minnesota, which has concluded:

"Analysis of the background of existing physicians suggests that the best way to obtain more practicing physicians for Minnesota would be to attract more Minnesota graduates to residencies in Minnesota. Expanded residency programs for specific needs promises to be the single most rapid and productive approach. These should include affiliations with model rural community hospitals and clinics."

Minnesota's excellent programs of graduate medical education have been chiefly responsible for maintaining the balance, a virtually exact balance, between out-migration of Minnesota trained physicians and the in-migration of those trained elsewhere. To meet state needs, the retention and in-migration ratio must be increased to meet intensified demand for medical care. Even without a rise in the present level of demand, this ratio must be increased to keep pace with the growth of the State's population.

It is generally conceded that teaching hospitals with reputations for excellence expose physicians in training to patients who are anomalous both in terms of clinical conditions and socio-economic status. This experience deprives the physician of clinical experience which is representative of a diversified community practice and tends to divert his interests to research, teaching, or specialization. Increased State support of graduate medical education will produce the desired returns only if graduate training programs afford representative clinical experience of a type which can be expected to develop interest in personal physician careers. In his examination of the Hennepin County General Hospital proposal, Glenn W. Irwin, M.D., stressed the desirability of offering clinical experience with private patients, as well as those receiving public assistance.

"Many have predicted that this type of hospital will be eliminated from the American scene. However, it is generally agreed that those institutions with innovative policies and programs will attain new levels of achievements in the fields of community medicine, undergraduate medical education, graduate medical education, continuing education, as well as education in many of the health sciences. Such institutions will continue to provide significant health care in the area, and should continue clinical research. In the case of the HCGH, a new teaching facility is essential if it is to continue to attract large numbers of patients and to attract new full time staff which can develop and implement redefined roles and responsibilities. The professional staff and administration should create soon a professional fees plan so that an orderly transition can occur as the hospital attracts a higher percentage of private patients and patients with insurance providing hospital and professional payments. The Hennepin County General Hospital should recognize that this will become an important source of income."

The Committee concurs in this view and hence has recommended that appropriations for graduate education include the stipulation that hospitals receiving this support develop methods of offering clinical experience involving both representative numbers of private, as well as public patients. The predicted decline in indigent teaching patients, as a consequence of Medicare and Medicaid, would seem to recommend this course of action, wholly apart from any other consideration.

The Committee has concluded that increased support of postgraduate medical education offers an economical and reliable means of retaining and attracting physicians for the State. This has led to the general recommendation that State funds be appropriated for residency training programs directly related to the training of personal physicians in geographical and community settings where increased supplies of medical manpower are most needed.

A Prefatory Note on the Committee's Recommendations

The recommendations which follow have been arrived at following an exhaustive study of the medical needs of the State of Minnesota and the existing and potential resources available for their fulfillment. It should be clearly understood that these recommendations are presented as goals which the Legislature should, insofar as possible, assist in accomplishing. No attempt is made to assess the feasibility of immediate Legislative implementation of these proposals, which of course is subject to the availability of State funds. The Committee's recommendations are intended to indicate the measures required to correct and avert deficiencies in medical services, as distinct from the question of how these measures are to be financed. They seek to identify promising programs, set priorities on their development and indicate the needed, if not necessarily available, level of State funding which would be required to implement them.

To restrict our recommendations solely to those measures which can be expected to receive prompt and favorable action by the Legislature would be to severely inhibit our ability to present fully the definitive findings of the Committee's study. The proposed course of action outlined herein is the product of one of the most thorough and searching analyses of medical education to be conducted by any Government body. Failure to present the conclusions and implications derived from this study would mean overlooking much that has been learned through the voluminous testimony presented to the Committee in its numerous hearings, from the authoritative body of information furnished by State and national authorities and from the diligent and thoughtful work of the medical institutions which presented detailed proposals to the Committee.

The cost figures included in this report should be understood as estimates of the State funds which would be required to implement the recommendations and indicate desirable levels of funding. Their purpose is to provide a composite financial projection of the need for State funds to advance medical education, which can be related to the priorities and evaluation of probable benefits presented in the body of the report. This, if nothing else, can assist the Legislature in evaluating financial needs for medical education in the context of an ordered array of inter-related programs, in contrast to the fragmented and piecemeal manner in which it normally is obliged to make such assessments.

Further, these estimates will help to define the extent of the State's ability, or willingness, to increase support of medical education in response to increased need and demand. Estimates of specific financial requirements can help define the practical limits on the level of State increases in support of medical education. This seems vital at a time when the medical institutions of the State must act aggressively and resourcefully to develop new sources of support for operational funds. The report of the Expert Advisory Panel of Medical School Deans and Medical Economists noted that Minnesota medical institutions have failed to take full advantage of funds available from non-State sources, such as the Regional Medical Program.

Indeed, the major lesson to be gained from this report and the recommendations it contains may be the recognition that the medical institutions of the State, and the Legislature in its appropriate role, must exercise increased resourcefulness and ingenuity in marshalling all available sources for the financing of medical education to meet needs which the State, by itself, is incapable of meeting.

Recommendations

Encouragement of New Forms of Medical Care Delivery

The Committee has sought to view medical education and its results as a continuum, seeking to determine how new programs, expanded programs, new technologies and new forms of organization and modes of delivery contribute to the objective of providing the highest attainable level of medical care to all of the citizens of Minnesota. By viewing individual programs in this broad context, it is our purpose to attempt to identify the strategic points at which increased levels of State support will produce the highest level of benefits.

In response to specific requests for proposals aimed at improving the distribution of medical manpower and medical services in Minnesota, the Committee received recommendations which, with two minor exceptions, were confined exclusively to conventional and traditional approaches to medical education. By singling out these proposals, the Committee hopes that it will encourage Minnesota health care providers to:

Engage in open discussion and experimentation with innovative forms of medical care reorganization and delivery.

Develop projects that incorporate new organizational patterns and modes of medical care delivery.

The Senate Committee offers the following specific commendations:

The Mayo Institutions, Rochester

Representatives of the Mayo Institutions have indicated at least a tentative interest in developing affiliated group practice centers in rural communities surrounding the Rochester area which now lack ideal medical care programs. These units would provide needed health care services and would be integrated with the development of the proposed Mayo Medical School. Since the kinds of physicians required to staff such units would be recruited and trained by Mayo and backed up by the resources of the Clinic, such a plan would presumably assure medical care of high quality for many Minnesotans for whom such care is not now readily available.

The Committee has a strong interest in the development of programs which offer promise of redressing the gross imbalances in the distribution of physicians. This interest stems from the concerns expressed in the preceding section of this Report. Strategically situated regional medical centers would provide the opportunity to test the effectiveness of an approach, which in the view of the Chairman of the Expert Advisory Panel, Dr. George James, is the only reliable way of assuring adequate medical services to rural areas.

While the proposal submitted by the Mayo Institutions did not give as much prominence and emphasis to such centers as they receive in this report, nor, indeed, make an unequivocal commitment to their establishment, the Committee considers pioneering efforts of this type a matter of such vital import that it hopes to encourage the Mayo Clinic to solidify its position with respect to this program and proceed vigorously with its implementation. In token of this interest, the Committee recommends the appropriation of $100,000 to aid in advancing the development of a Mayo regional centers program. This recommendation is made with the twin proviso that such funds be applied to the development of peripheral regional medical centers and that the results accomplished during the 1969-71 biennium be reported to the next session of the Legislature. Should the Mayo Institutions decline to accept the appropriation under these terms, it is recommended that proposals be elicited from other qualified medical groups with an interest in putting the available funds to use in setting up such centers. The proposed appropriation is admittedly modest; it is based on the estimated cost of supporting the work of a core staff over a two-year period. Of greater importance than the amount is the possibility that this appropriation would assert the Legislature's strong interest in the establishment of such programs and thus lend the sanction of the State's lawmaking body to a form of needed innovation which some segments of the medical profession continue to resist.

The School of Public Health

Pursuant to a study of Minnesota's health care needs and problems, the University of Minnesota School of Public Health developed the primary design for Project HEALTH, an experimental approach to the correction of health care shortages in rural communities. This plan would provide a comprehensive array of health services, including medical care, and might also be linked with programs of medical education through the College of Medical Sciences.

For the 1969-71 biennium, the Committee recommends an appropriation of $100,000 to the School of Public Health to assist in the continued development and implementation of Project HEALTH. The Committee recognizes the necessity of obtaining additional funds for this purpose from private and other public sources. Again, this modest appropriation would signify the sincerity of the Legislature's interest in encouraging new forms of care and perhaps, for the reason stated above, help facilitate acceptance of such innovation.

Two conditions should be attached to this appropriation:

That acceptance of the appropriation shall be considered earnest of the intent to carry out the proposed program.

That the officials of the College of Medical Sciences present to the 1971 Legislature a report on the progress and results attained during the biennium.

Establishment of a Continuing Census of Physician Manpower and Distribution

The Senate Committee believes that it is desirable to maintain an ongoing census of the number and distribution of physicians in Minnesota, which would provide information on the kinds of medical practice in which they are engaged and their locations. If costly efforts are to be made to correct deficiencies in the number and distribution of Minnesota physicians, then some method of gauging the effectiveness of these measures seems essential. The means of obtaining this information, and the manner in which it can be obtained, are readily available.

The Committee therefore recommends that the Legislature request the Northlands Regional Medical Program to establish and maintain a manpower information system which will include current information regarding the location and type of practice of all Minnesota physicians. The Committee further recommends that the Board of Medical Examiners be instructed to modify the annual relicensure application to elicit this additional information, and that such information be provided by the Board of the Northlands Regional Medical Program office for purposes of maintaining the physician census.

Recommendations Regarding Graduate Medical Education

The Senate Committee has already stated its belief that state support for programs of graduate medical education is both legitimate and highly desirable. State support for the selective expansion of residency programs offers a fast, effective and relatively inexpensive method of assuring the availability of the number and kinds of physicians needed in Minnesota.

Over the past half century, Minnesota's strong program of graduate medical education has consistently attracted as many physicians educated elsewhere to the State as have been lost through out-migration.

The Committee's study has led to the general recommendation that State funds be appropriated for residency training programs which have as their goal the production of primary physicians. The Committee further recommends that such appropriations include the stipulation that hospitals receiving this support develop methods for providing clinical experience involving both private and public patients, preferably in geographic and community settings where doctors are most needed. Specifically, the Committee recommends:

Hennepin County General Hospital, Minneapolis

Hennepin County General Hospital has a well-established capability for providing physicians to the State of Minnesota. Its proven ability to attract students to its graduate programs, and its emphasis on medical practice, is a strong assurance that its proposed Family Practice Residency Program will contribute substantially to the number of personal physicians needed in Minnesota.

It is therefore recommended that the Legislature consider the appropriation of no less than $500,000 for the biennium to Hennepin County General Hospital to implement its proposed Family Practice Residency Program which is scheduled to be inaugurated in the summer of 1970. This recommendation is based on that portion of the estimated costs of Hennepin County General Hospital's total expansion program which would be devoted to the education of primary physicians. Further, this appropriation should be contingent upon fulfillment of the condition, stated above, that private patients, as well as those receiving public aid, shall be included in the clinical program. In making this recommendation, the Committee expects that Hennepin County General Hospital will take full advantage of all available sources of payment for care provided by physicians to both private and public patients.

The Senate Committee further recommends that Hennepin County General Hospital be required to submit to the 1971 Legislature a report on the Family Practice Residency Program, including

costs of operation and sources of financial support, in sufficient detail to enable the Legislature to calculate a per student cost by which to determine future appropriations.

Department of Family Practice & Community Health, College of Medical Sciences, University of Minnesota

The University has placed strong emphasis on the establishment of the Department of Family Practice and Community Health program as a means of fulfilling the need for personal physicians in medically deprived rural and urban areas.

The program, as outlined, could produce dual benefits by providing much needed medical care through the facilities of rural and neighborhood medical centers, as well as by increasing the supply of personal physicians through programs affiliated with the centers.

The University of Minnesota Medical School has requested a special appropriation of $738,780 to finance this program for the biennium. The Committee concurs that no less an amount is required to support a program of this magnitude. However, in the Committee's view, the University has an inherent obligation to train physicians needed to fulfill the health needs of the State of Minnesota. The training of physicians in family medicine should thus be considered a basic responsibility and an integral part of its overall function, rather than a special activity requiring a dedicated appropriation. The Committee takes the position that the medical school, along with all other academic divisions of the University of Minnesota, should be directly responsive to the needs of the State. This conception of the University's obligation to fulfill the practical needs of the State is completely consistent with the traditions of land-grant universities, and is, indeed, the fundamental principle of this concept of popular, public-supported education.

It is therefore recommended that the Family Practice Program be carried forward under the general appropriation to the University of Minnesota Medical School. It is also recommended that the University report to the next Legislature on the effectiveness of this program, to permit the Legislature to gauge its success in discharging its responsibility in meeting the critical need for physicans in family practice.

In determining the general appropriation for the University Medical School, it will no doubt be necessary to take account of the need for additional funds to support the Family Practice Program, lest the future of this effort to produce needed family physicians be placed in jeopardy. However, the principle that it is, and has been in the past, part of the University's basic responsibility to produce such physicians should be clearly established. There should be no misunderstanding that the Legislature accepts the premise that the University deserves special commendation or support for taking steps to remedy a problem which can be considered the consequence of previous unresponsiveness to the needs of the State.

Recommendations Regarding Undergraduate Medical Education in Minnesota

The Senate Committee believes that Minnesota's unique resources for undergraduate medical education should be developed and expanded in order to alleviate existing physician shortages, and, further, that this expansion can be regarded as a form of economic development offering potential collateral benefits to the State. This judgment is based on such findings as the following:

In addition to effecting changes in the distribution of the state's physicians, Minnesota must increase its production of doctors in order to overcome a present functional deficit of nearly 1,000 physicians.

In view of basic policy changes now being formulated which will increasingly shift responsibility for the fiscal support of medical education from State to Federal government, physician production can be regarded as a form of economic resource, and encouragement should be given to assist those Minnesota groups proposing the establishment of new medical schools.

Existing cost analysis practices make it exceedingly difficult to determine the costs and sources of financial support for medical education, and to relate such costs to benefits realized in Minnesota.

In comparison to the time and costs required to establish a new medical school, the most rapid and economical means for increasing physician production in Minnesota is by expansion of the present College of Medical Sciences.

Ongoing Study of Medical Education Costs and Benefits

In the course of its study, the Committee has repeatedly encountered difficulty in obtaining accurate information on the costs of medical edu-

cation and available sources of financial support for such education. An associated problem is that of relating medical training costs to the benefits gained. The attempt to base its findings on such cost-benefit ratios was a guiding principle of these inquiries. The Committee repeatedly pressed proponents of various programs to project the probable gains in medical services for the State of Minnesota which could be expected from a given expenditure of funds. None, however, provided fully adequate data on this question, and a number confessed their inability to do so.

The wide variations in the estimates of program costs submitted to the Committee indicate that medical educators do not agree on cost accounting procedures, the relationship of operational or training costs, and capital cost components, the manner in which research grants contribute to educational costs, and other factors involved in the determination of the costs of medical education. This has represented a severe handicap in attempting to arrive at recommendations on the funding of programs. Prompted by the urgent need to set in motion efforts to correct and avert a medical manpower crisis, the Committee has been obliged to rely chiefly upon the estimates provided by applicants for funds and on the advice of authoritative advisors, including the members of the Expert Advisory Panel. The recommendations represent the Committee's considered judgment of the minimal amounts necessary to initiate programs whose delay could be detrimental to the State's present and future medical services.

In view of the fact that medical education ranks as the most costly branch of higher education, there is an urgent need for more uniform and accurate data on the nature and justification of these costs. The Committee believes that recommendations contained in this report, should they be adopted, afford the opportunity to develop more reliable guidelines for evaluating expenditures for medical education. A number of the recommendations involve programs which require the submission to the Legislature of progress reports on their performance and effectiveness. They also involve formulas based upon support of medical education on a per student basis, which is regarded as a new and promising method of accurately assessing physician training costs. It is therefore desirable to set up a Legislative review mechanism with the purpose of evaluating the performance of these programs, and which would have the parallel purpose of developing accurate and uniform methods of analyzing costs and effectiveness. Such methods could provide the basis for uniform methods of presenting budgets and appropriation requests to the Legislature.

The Committee therefore recommends the establishment of a Legislative Interim Commission to perform these functions and the appropriation of a sum not to exceed $100,000 to support its activities and enable the Commission to engage appropriate professional staff assistance and expert consultation.

The University of Minnesota
College of Medical Sciences

The expansion of undergraduate medical education, from the standpoint of numbers, if not necessarily selection of type and location of practice, can clearly be accomplished most efficiently and economically through expansion of the existing program at the University of Minnesota Medical School, providing capital costs are held at a reasonable level. The University of Minnesota School of Medicine is noted for a high level of excellence and conducts undergraduate training at a relatively low cost.

At present, State support for undergraduate medical education at the University is reported to be just under $5,000 per student per year. Since this amount falls below the median level of support provided to comparable state-supported institutions, the Committee recommends that this basic support be increased. It is further recommended that the Legislature adopt the principle of determining biennial appropriations for undergraduate medical education on a per student basis, and that such capitation allowances in the future include both operating and capital costs.

As a guideline for the Legislature, the Committee sought to determine the minimal increase required to meet the needs of the Medical School undergraduate program. It did so by means of consultations between a member of its Expert Advisory Panel and officials of the Medical School. On the basis of this information, the Committee recommends that, for the coming biennium, an appropriation be made equal to the sum of $10,000 per student enrolled per year.

The Committee assumes that any increased appropriation for undergraduate medical education at the College of Medical Sciences will also cover costs incurred by the Hennepin County General Hospital, St. Paul-Ramsey Hospital, and other hospitals with which the College of Medical Sciences may affiliate for clinical instruction of undergrad-

uate medical students, and that the College of Medical Sciences will arrange to remunerate these institutions for such costs.

The Committee has taken careful note of the extensive study of the existing curriculum for undergraduate medical education conducted by the College of Medical Sciences and expresses the hope that the proposed revisions in curriculum will be implemented as scheduled.

The Senate Committee has reviewed the proposed expansion of the number of transfer students accepted by the College of Medical Sciences from the two-year Dakota Schools, and recommends that legislative action be postponed pending the outcome of a continued study of the costs and benefits that may be expected to result from implementation of this proposal. The Committee offers the following judgments regarding this proposal at the present time:

Any agreement with the Dakota Schools, and with the states of North and South Dakota, should be based on more precise information regarding the per student costs of undergraduate medical education, including both operational and capital costs.

Any agreement with the states of North and South Dakota should require those states to bear the same proportion of per student costs borne by the State of Minnesota in its support of undergraduate medical education at the College of Medical Sciences.

The Senate Committee has studied the proposed plan to expand the Health Sciences Center at the University of Minnesota in the context of its concerns for providing physicians' services for Minnesota, and has found it difficult to relate this proposed capital outlay to the programs proposed and to the criteria which have guided the Committee's study. The Committee recommends that the Legislature postpone any action regarding this building expansion proposal, pending additional study of the plan and its functional relationship to present and proposed expansions of educational and health services programs at the University.

The Proposed Mayo Medical School, Rochester

There can be no question that a Mayo medical school would be a superlative institution. The benefits which would accrue to the State of Minnesota from State support of such a medical school are less clear. Mayo officials have been straightforward in declaring that they envision a medical school which would be pre-eminently national in influence and impact. However, this should not preclude consideration of some level of State participation in the support of a school in Rochester. The establishment of the peripheral group practice centers discussed earlier could, for example, produce very direct benefits for Minnesota. Less direct, but no less worthy of consideration, are benefits to be gained from State encouragement of this program as it relates to the goal of fully exploiting Minnesota's potential as a producer of medical manpower for the nation as a form of economic development.

The Senate Committee recommends that the Legislature consider the provision of financial support for the operation of the proposed Medical School based on an approximation of $8,000 per Minnesota resident enrolled per year. This per student amount is derived from Mayo's estimate that the total annual per student cost will approximate $16,000, half of which will be sought from "other sources." Obviously, the Committee can only estimate the number of Minnesota residents who will be enrolled in the proposed first-year class of 1970-1971. For the sake of providing Legislative guidelines, this estimate has been arbitrarily set at ten, but the Committee freely admits that the number could be larger.

The Committee recommends that state support for the Mayo Medical School be directed toward support of its operational costs, and assumes that the Mayo Institutions will obtain necessary capital funds from private and Federal government sources.

The Northern Minnesota Council for Medical Education, Duluth

The Committee assumes that the existing Medical School in Minneapolis is nearing the limit of its enrollment potential, and that the University of Minnesota at Duluth offers a logical site for future expansion of University-sponsored medical education. A second medical school situated in Duluth, if it established a truly innovative and relevant program, could play a unique role in providing primary physicians for a large segment of the State where such services are lacking.

The Committee therefore recommends that the Legislature appropriate a one-time planning grant of $200,000 as an expression of its interest in assisting the Northern Minnesota Council for Medical Education in the elaboration of a distinctly innovative program for medical education. The Committee has determined the amount of this suggested appropriation in counsel with its Expert Advisory Panel, whose members are familiar with

the cost requirements of such planning activities.

The Committee further recommends that the planning grant be made with the requirement that the Northern Minnesota Council for Medical Education submit a detailed report to the 1971 Legislature describing the program it has developed, and the progress made in assuring its effective implementation. The Committee would anticipate that such a report would discuss such aspects of medical education as:

Organization and delivery forms as they relate to the distribution of physicians in rural areas of Minnesota.

The manner in which the proposed curriculum, clinical facilities, student selection policies, and other aspects of the program will promote the objective of training practicing physicians for Minnesota.

Detailed estimates of the anticipated costs of its proposed program, including both capital and operating costs, and estimates of the sources and amounts of financial support required to implement the program.

The Northern Association For Medical Education, St. Paul

Leaders of the Northern Association for Medical Education (NAME) have exerted determined efforts to alleviate Minnesota's physician shortage problems by establishment of a medical school in St. Paul. The Committee believes that such a school could contribute significantly to the production of family physicians for Minnesota practice.

The Committee therefore recommends that the Legislature appropriate the amount of $200,000 to the Northern Association for Medical Education as a one-time planning grant in token of its interest in helping NAME to obtain additional essential commitments and develop its program. The Committee bases this appropriation on the suggestion of its Expert Advisory Panel, and on its familiarity wth the cost requirements of such planning activities. NAME could be expected to provide a like amount as its contribution to this developmental planning.

The Committee recommends that the appropriation be made with the stipulation that NAME be required to submit to the 1971 Legislature a progress report indicative of the achievement of:

Firm agreements with appropriate educational institutions to assure proper academic affiliation for the proposed medical school.

Specific affiliation agreements with one or more appropriate teaching hospitals.

A statement from the Liaison Committee on Accreditation of the American Medical Association and the Association of American Medical Colleges indicating that it may expect "reasonable assurance of accreditation."

Detailed estimates of operational and capital costs of the proposed medical school to enable the Legislature to arrive at a per capita formula on which to determine future financial support.

Assured financial support from private sources for both capital and operational costs of the proposed school.

Summary of Suggested Appropriations 1969-1971

I. Suggested appropriations for recommendations regarding medical care organization and physician distribution:			$200,000
A. *Developmental Projects*		$200,000	
1. Mayo Foundation, Rochester	$100,000		
2. Project HEALTH, School of Public Health	$100,000		
B. Continuing Census		- 0 -	
II. Suggested appropriations for recommendations regarding graduate medical education			$500,000
A. *Hennepin County General Hospital, Minneapolis*		$500,000	
B. *Department of Family Practice & Community Health, University of Minnesota College of Medical Sciences*		($738,780)*	
III. Suggested appropriation for recommendations regarding undergraduate medical education			$13,180,000
A. *Study of the Costs of Medical Education*		$100,000	
B. *University of Minnesota College of Medical Sciences*		$12,600,000	
Suggested biennial appropriation based on annual per capita award of $10,000 per undergraduate student enrolled (N 630)			
C. *Mayo Medical School, Rochester*		$ 80,000	
Suggested appropriation based on a per student annual award of $8,000 for each Minnesota resident enrolled, and estimating ten students from Minnesota in first class, Fall, 1970.			
D. *Northern Minnesota Council for Medical Education, Duluth*		$200,000	
E. *Northern Association for Medical Education, St. Paul*		$200,000	
Grand Total, all proposed recommendations at suggested appropriations			$13,880,000

*To be allocated from general appropriation to University of Minnesota Medical School.

Report of the Panel of Medical School Deans and Medical Economists to the Minnesota Senate Subcommittee on Medical Education

Introduction

The Senate Subcommittee on Medical Education appointed a special advisory panel composed of five medical school deans and two medical economists to recommend appropriate priorities for the State's next efforts in medical education. The following individuals were asked to serve:

George James, M. D., *Chairman*
Dean, Mount Sinai School of Medicine
New York City, New York

John J. Conger, Ph.D.
Dean, University of Colorado School of Medicine
Denver, Colorado

Roger Egeberg, M. D.
Dean, University of Southern California School of Medicine
Los Angeles, California

John R. Hogness, M. D.
Dean, University of Washington School of Medicine
Seattle, Washington

Glenn W. Irwin, M. D.
Dean, Indiana University School of Medicine
Indianapolis, Indiana

Rashi Fein, Ph.D.
Professor of the Economics of Medicine
Harvard University: School of Medicine and John Fitzgerald Kennedy School of Government
Boston, Massachusetts

Paul Feldstein, Ph.D., Professor of Medical Economics, Program in Hospital Administration, University of Michigan
Ann Arbor, Michigan

All but Dr. Conger were able to attend a two-day session in Minnesota on January 9-11, 1969. At this time site visits were made by at least two members of the panel to Duluth, University of Minnesota School of Medicine; NAME; Minnesota Hospitals, and Hennepin County Hospital. The panel had a group meeting with Drs. Pruitt, Code, Beahrs and Mr. Shuster of the Mayo Clinic to discuss their interest in the development of a medical school. Although Dr. Conger could not take part in the visit to Minnesota he submitted comments based on a study of the submitted documents and reviewed and participated in all panel reports.

Background

The panel was supplied with the proposals by the several groups which were site visited on January 9-11, 1969. In addition, its members were given the "Study Procedure" bulletin dated November 8, 1968 which provided the guidelines for their study. The major features of the panel's assignment were to be as follows:

1. To review the various proposals made by groups interested in receiving state funds in support of medical education.

2. To participate in site visits to those who had made proposals.

3. In their review the panel was to give emphasis to:

   a. The training of 100 additional physicians annually in Minnesota.

   b. Assuring that 65 per cent of these new physicians would specialize in the practice of primary health care or a related practice.

   c. Assisting in making physicians' services available in all parts of Minnesota, especially in rural areas and urban ghettos.

   d. Providing a location and organization that can provide an appropriate environment and the necessary resources to permit and support the proposed program of medical education.

   e. The necessity of producing and retaining suitably trained physicians at the lowest annual cost per retained graduate.

   f. The requirement that all new programs of medical education would meet appropriate accreditation standards.

General

The panel wishes to go on record at the outset by stating that the training of additional numbers

of new physicians is an important but not the sole, or even a sufficient, means of meeting the laudable goals for adequate medical care expressed in the various documents made available by the Senate Subcommittee. There are many aspects to the improvement of both the quality and distribution of medical care dependent on such factors as the availability of facilities, numbers and types of available allied health workers, the organization of the medical care effort, the professional stimulation available to health professionals, the development of new research knowledge, and many more.

Nevertheless, there is no doubt that the State of Minnesota has not yet supported medical education to the extent of either quantity of students or the amount of funds per student which should be expected of a state of this size and resources. Almost any reasonable plan for improving the state's medical care program would, therefore, require a major increase in the support for medical education. This will require more effort aimed primarily at undergraduate medical education coupled with some selective attention to graduate (intern and resident) education.

It is of interest that each of the aspirants for a new medical school promises its first new or expanded class in about five years, and each also promises to highlight family medical practice.

The University of Minnesota

The University of Minnesota holds a central position in the possibilities for new medical schools. Except for the still vague possibility that some college in St. Paul (unidentified to the panel) or some collection of local colleges there might wish to establish a university, the State University appears to be the academic base for any new medical school. This is of particular interest because, if the University so wished, it has the academic potential which, when coupled with appropriate funds, could support medical education at any of the sites proposed. Hence, if the Regent's Statement on Medical Education in Minnesota is taken at face value then the efforts at expanding the existing medical school, the new program at the Mayo Clinic and the gradual development of a program at Duluth are all in view.

Review of Proposals

UNIVERSITY OF MINNESOTA

One of this nation's greatest medical schools, the University of Minnesota, is applying to the State Legislature for the funds with which to expand its present first-year class from 160 to 200 students, to admit more third-year students from the Dakota two-year medical schools, develop an accelerated three-year medical school program, increase its commitments to graduate medical education, revise and modernize the medical curriculum to make it more relevant to our society and develop a new curriculum track in family practice and community health.

The pertinent material from this proposal is abridged in the Summary of Proposals for Expanding Medical Education in Minnesota.

The Site Visit

On January 13, 1969, Drs. Rashi Fein and George James met with Dean Robert Howard and several of his Associate Deans and Department Chairmen. The following facts were learned:

1. Compared to other states Minnesota appropriates relatively less per medical student to its medical school. With the coming cuts in Federal research funds, a serious threat to the existing medical school is posed by the possibility that the State would commit itself to the support of a new medical school at this time. At present only one-quarter of the staff and one-third of the medical school's capital construction costs are born by the State. If the present medical school were forced to begin a steady program of competition for State funds now, there is real fear that faculty morale will slip and quality will deteriorate.

2. The plans for the new Department of Family Practice and Community Health are excellent, well formed, well staffed and have the support of the clinical faculty. The plans to affiliate this program with neighborhood health centers to support the health services for the slums has, indeed, already begun.

3. The University of Minnesota knows how to run a medical school and can be expected to deliver on its promises with respect to the 40 new students within the five-year period. On the other hand its ability to deliver on its promises with respect to the admission of more third-year students from the Dakotas is not secure. Many other medical schools are eagerly seeking the graduates of these two-year programs. The individual student can decide for himself, and present experience indicates that he is remarkably independent and unpredictable.

4. The University is clearly in the best position to continue to build strong programs for the allied health professional worker. These categories of workers are becoming increasingly important to the ultimate ability of the nation to meet the health demands of its citizens.

5. The University of Minnesota program is tied in with the upgrading of several already good medical institutions, such as the Hennepin County General Hospital and St. Paul-Ramsey Hospital.

6. The new innovative curriculum has received an overwhelming endorsement from the faculty.

7. Most of this Medical School's students are Minnesotans and large numbers of the new students admitted under the expansion program can be expected to remain there. The School now does have the well-qualified applicants available to fill an expanded class.

8. On the other hand several disadvantages do exist with respect to this proposal in competition with the other proposals:

   a. It offers no speedier program for the training of the requisite number of physicians. Actually the class expansion will only give 40 instead of the desired 60 - 65. The three-year curriculum will add one year's increment of physicians—but only add it once. However, the cost per physician trained will be less, unless the new program necessitates a longer residency period.

   b. It offers no new location, and hence does not help as much with the distribution of physicians around the state or the upgrading of a new set of hospitals for residency training.

   c. There *is* an ultimate useful upward limit of class size. Although 200 students are not beyond this limit, the State may wish to give priority to an area which has additional potential for later growth.

Conclusions

It should be a foregone conclusion that the University of Minnesota School of Medicine will eventually be enlarged. It should also be strengthened and assisted on its path to streamline and modernize its educational program. On the other hand, a state the size of Minnesota should have medical schools in other locations. As these are developed, great care must be taken not to harm the existing program. In fact, this program will require extensive new State support during the coming years, if it is to retain its present status as one of the nation's leading schools.

DR. GEORGE JAMES
DR. RASHI FEIN

NORTHERN ASSOCIATION FOR MEDICAL EDUCATION (*NAME*)

Organized in 1958, NAME is led by a group of 500 physicians on the staffs of the St. Paul hospitals. This group has developed a Board of Directors and a lay Executive Director. Their mission has been to combat the expected worsening shortage of physicians and to create a new school of medicine located in St. Paul and working in conjunction with a number of the local hospitals.

The pertinent material from the NAME proposal is abridged in the Senate Interim Committee on Medical Education's Summary of Proposals for Expanding Medical Education in Minnesota.

The Site Visit

The site visit was made on January 13, 1969 by Dr. Rashi Fein and Dr. George James. Mr. Hedback, Dr. Felder and at times six other physicians represented the major St. Paul hospitals (other than St. Paul—Ramsey) and took part in the discussions.

The beginning of efforts for a local regional plan in 1959 led to the solicitation of more than $200,000 from about 700 contributors, thereby supporting the NAME program of study and planning. There has been real interest expressed in NAME's proposed program on the part of this wide representation of local citizens. Several major wealthy foundations have indicated their willingness to support NAME's $14 million capital program in a way which would take care of the total local share of the cost (about $4 to $6 million), the remainder being expected, and reasonably so, from Federal funds. There are, however, two conditions to this funding possibility:

1. The major foundation under consideration has its major assets tied up in litigation. The date of final settlement is uncertain.
2. All significant foundation contributions to the capital program are said to be contingent

upon reasonable evidence that NAME can obtain the necessary operating funds for the new medical school. As indicated in the proposal, $6,000 per student is required from annual future state appropriations.

Two sites in St. Paul, each offering ready access to several leading hospitals within a campus area, have been studied by an architect. Either plan is said to be both practically and economically feasible within the planned cost potential of NAME. Plan A in particular would organize an effective group of four hospitals with from 1,200 to 1,500 beds within a single "superblock" campus area in the heart of the city with room for the construction of basic science facilities as well. It is true, however, that these four hospitals now have great difficulty attracting American-trained interns. The earliest possible date for completion of all facilities and admission of the first class would be in five years.

The leading physicians in the group led by Dr. Davitt Felder have interviewed a number of potential Deans who are said to have been interested in accepting the challenge of NAME's proposed program of training family physicians. In this curriculum they propose to use the practicing physician's office as a teaching center as well as the hospital bedside.

The problem of an adequate and meaningful university-type academic affiliation has been explored. At the moment three possible plans are being investigated:

1. The University of Minnesota—NAME's Directors are not willing to place themselves under the control of the existing medical school at Minneapolis, but they are quite amenable to accepting the leadership of the President of the University and the Board of Regents as a new university entity with its own advisory board. Preliminary discussions have already been held with the President of the University, but no commitments have been made by either side.
2. A consortium of local colleges—There are many colleges in St. Paul which offer programs, mainly at the Baccalaureate level, although some Master's degree programs do exist. An organization of these institutions was formed, elected a Chairman and has discussed the possibility of such a consortium leading to the development of Doctoral programs including one in medicine. Of late this group has been inactive. NAME's sponsors believe that the agreement by the State to fund the operation of a medical school would speedily reactivate the interest of the colleges in this arrangement.
3. One particular college, said to have a strong academic program but not otherwise identified to the site visitors, is reportedly willing to become a university together with NAME's new medical school. This plan also requires the promise of state operating funds for the medical school before the President of the specific college will be willing to explore the matter further.

Critique

The NAME proposal has the following factors in its favor:

1. It does have a feasible architect's plan for an available site adjacent to four good hospitals, totaling 1,200-1,500 beds.
2. The Minneapolis-St. Paul metropolitan area is sufficiently large to support another medical school, and it is logical to locate that school in St. Paul, where a large number of available hospitals are located and there is great medical sophistication. This program would upgrade the quality of medical care in these hospitals.
3. The numerically extensive local support in St. Paul is an indication of further support in the future. However, so far the number of supporters has been more significant than the size of the individual contributions or pledges.
4. The dedication and enthusiasm of the local physicians who are accepting the leadership role is very great. They do impress the observer with their commitment to the family physician type of medical care and medical education program.
5. The future willingness to raise private funds for medical education of this group must be recognized as a useful way of potentially reducing the demands on state funds.
6. There are possible arrangements which can be made for an academic affiliation.
7. It offers the hope for a new class of 64 students in five years, the same delay which exists with each of the other applicants.

The NAME proposal has the following weaknesses:

1. The academic affiliation is rather vaguely described and no formal commitment has been made by an academic institution. The

time to achieve such an arrangement may well add additional years to the delay before the first class of medical students is admitted. If the University of Minnesota is that academic institution, then the extent of input from the other branches of the University has not yet been planned. If it is to be one of the St. Paul colleges or a consortium of them, then not only will the academic relationships have to be worked out, but there is no present information available to prove that these institutions now have, or can rapidly develop the appropriate program for an academic sponsor of a medical school. A modern medical school should be related to strong programs in the allied health professional fields, basic science, social science and economic fields.

2. The building funds which are expected from local foundations are by no means assured. The litigation which now ties up their most likely large giver may result in extensive delays.
3. The NAME group of physicians are, for the most part, not now engaged in active undergraduate medical education.
4. Very few non-public medical schools have been started during the last two decades. When they have been started there has usually been either extensive funding committed in advance or the direct promise of extensive funding.
5. Another medical school in the St. Paul area would not provide as much of an inducement to the spread of physicians in other areas of the state beyond the present metropolitan area which is already the home of a medical school.

Conclusion

While the enthusiasm and broad local citizen base of the NAME group are highly commendable and its proposed program useful in scope and content, the incomplete nature of the essential elements in the program suggest that this is not yet one of the best prospects for the State of Minnesota. On the other hand, this group should be encouraged to plan further. At some future date it does appear reasonable that a medical school will exist in St. Paul.

It is therefore recommended that the Legislature consider the desirability of making a small one-time planning grant of about $200,000 to NAME as a token of its interest in helping the group to obtain additional essential commitments and develop its program. The legislature need not at this time promise to supply operating funds in any finite period, which may well be far beyond the expected five years. By that time extensive Federal funds may be available to help meet the costs of medical education. It does appear likely that *if* the NAME plan does become feasible and there are no other sources of funds, the State of Minnesota would do well to support this additional number of new medical students despite its intervening commitment to some other school.

DR. GEORGE JAMES
DR. RASHI FEIN

THE NORTHERN MINNESOTA COUNCIL FOR MEDICAL EDUCATION (DULUTH)

This report presents an evaluation of the potential of the University of Minnesota at Duluth (UMD) as a source of additional qualified physicians, with a high proportion staying in Minnesota.

The people of Minnesota want—within the limits of financial feasibility—to make a substantial addition to the number of physicians practicing in Minnesota, particularly in communities outside the three or four larger cities.

General Background

The method of delivery of medical care (now more broadly termed health care) has changed relatively little during the past 10 or 20 centuries, while the advances in medical knowledge have doubled the information pool available to the health sciences in the past thirty years. Therefore, it is now possible to save lives, shorten illness and return to normal living large numbers of people who could not have received these benefits before. It is more important now than ever that adequate health care be available to all.

To accomplish this is expensive and will only be feasible through closer cooperation between doctors, nurses, technicians, etc. working as teams. New methods of health care delivery are now being explored and worked out. Definite patterns somewhat different from the present ones will undoubtedly be available by the time additional physicians are trained in new programs proposed in the State of Minnesota. Therefore one must expect to answer Minnesota's problem in a better and more realistic way than will be possible by copying patterns that

worked well when our scientific knowledge was very very much less and the costs of medical education one-twentieth those of today.

New educational programs must be designed to meet the needs of the future, not patterned on the past. For example, primary physicians will make increasing use of specially trained nurses or technicians to extend their hands out into larger areas and thus enable them to care for more patients. The nurse-technicians will be able to do things which they are specifically trained to do expertly, performing tasks which now make up at least 50 percent of a physician's work. It is probable that much of medicine will be practiced in some such way eight or ten years from now. The proposals before us should be evaluated against this background.

The University of Minnesota at Duluth is rapidly evolving into a full-fledged University. It has doubled its enrollment, faculty and disciplines in a very few years and it will probably increase its enrollment from 5,000 to 10,000 in the next five years. It has now a sound basis in the sciences, the humanities, the social sciences and the arts—and an excellent library with great potential. A number of Master's degree programs are currently in operation and it is anticipated that Ph.D. programs will be developed in conjunction with the Graduate School of the University. A School of Social Work has been approved and is under development. It is already an intellectual center for the great northern reaches of the State.

On its more than 200-acre campus overlooking Lake Superior, it has a 40-acre plot available for a medical school which it estimates would cost $30 to $35 million to build. This figure is probably realistic to establish the initial functioning units, but the Medical Center will eventually cost more as necessary additions are made.

The Provost and Vice Provost of the University are competent, realistic men who, on the one hand, are clearly dedicated to the establishment of a first-class, innovative program designed to meet the needs of the State, but on the other hand, have given careful consideration to the impact of such a program on the University at Duluth.

A Planning Committee made up of representatives of the University and of the community of practicing physicians has worked very effectively together, has consulted with outside authorities in this field of medical education and has put together a thoughtful and well-organized proposal.

While a 250-400 bed University Hospital will be necessary and important for the long-range development of the medical center, the present hospital situation in Duluth is a fortunate and propitious one. Duluth has three outstanding hospitals, a new and excellent rehabilitation clinic and a mental hygiene clinic. The hospitals are St. Luke's, St. Mary's and Miller. The rehabilitation clinic is attached to the Miller Hospital and the mental hygiene clinic is free standing. St. Luke's and St. Mary's are completing major expansion programs that will bring their capacities to approximately 500 beds each and Miller is about to go to bid on an addition that will bring its capacity to 225 beds. The first floors of Miller will accommodate the state, county and city health departments and Federal health related offices and most of the existing hospital will be remodeled as offices and research laboratories. An impressive amount of space will be available for these functions. St. Luke's and St. Mary's have ample space to allow for remodeling into teaching space, including small classrooms. Each has an amphitheater. All three hospitals would seem to be very well run and a large proportion of physicians belong to the medical staffs of all three hospitals.

Personnel

Greater Duluth has approximately 100 physicians of whom roughly two-thirds are specialists and the other one-third general practitioners. One could draw a part-time clinical staff from among these. There is a long-standing tradition of teaching in these hospitals since they run active internship programs which are filled, or nearly filled, every year. The clinical staffs proudly point out that the Duluth hospitals have more interns than all of the other non-University affiliated hospitals in the State put together.

To get a school started basic scientists would need to be brought in and appropriate departments developed at the University. In addition, a core of full-time clinical faculty would need to be added in all major clinical areas. These needs are well recognized by both University officials and the practicing community. The appointment of an appropriate dean *dedicated* to the training of a high proportion of primary physicians (general practitioners) would of course be critical in the development of the school along the lines outlined in the proposal. He could shape his faculty and choose his departmental chairmen with the aims expressed by the legislature. Using his faculty and the knowledgeable practitioners of Duluth the school could drive home the challenge of the broad scope of

health care and the problems of the continuum of health care to its students.

Students

Applicants to the medical school could be selected who would have a strong leaning and a great likelihood of going into practice in Minnesota. There is evidence that a significant number of such students could be recruited from the Northern areas of the State and elsewhere, of course.

Postgraduate Training

The postgraduate programs (internship, residencies and, later, fellowships) of the three hospitals totaling 1200-1300 beds and the examples set there would further, and *very importantly,* direct the training of the graduates of U.M.D. and other medical schools toward the practice of medicine in Minnesota with emphasis on practice in the rural areas.

The important point here is that this medical school with a fresh start, away from the influence of the more conventional medical school patterns of the big city, could really address itself to this pressing and exciting problem with pride, uninhibited by previous commitments, attitudes, postures and conventions, factors which envelop most existing medical schools with strong forces which inhibit radical change.

Conclusions

The primary advantages of this plan in filling Minnesota's need for medical manpower are:

1. With the prestige of a great University behind it, U.M.D. can afford to break with the patterns of traditional medical schools and with appropriate leadership draw to its faculty a group of scientists and clinicians who would carry out this aim of training physicians for practice in Minnesota. Through appropriate selection the faculty could attract and accept a high proportion of students who would prefer to practice in the less densely settled areas of the State.
2. Because it would exist in Duluth it could itself become the center of consultative support and be a great force for the maintenance of a high level of patient care.
3. It could be the mainspring of continuing education for the health profession (M.D.'s, nurses, social workers, technicians, etc.) in all of Northern Minnesota.

Secondary gains:

1. A U.M.D. medical school could serve as a great additional impetus to the developments of higher education in the northern part of the State.
2. It would provide work for 2,000-4,000 people—college educated in the most part.
3. The presence of this large nucleus of highly trained people will serve to strengthen the cultural development of Duluth and stimulate, secondarily, industrial and other developments of the northern regions of the State.

DR. ROGER O. EGEBERG
DR. JOHN R. HOGNESS

NOTE ON THE MAYO PROGRAM

The group meeting of the Panel with members of the Mayo staff, together with the Chairman and Secretary of the Senate Subcommittee, provided much information of interest. However, this cannot be considered the equivalent of a site visit. The Panel did not receive the Mayo Clinic proposal until the day of the group meeting. The session was not geared to the same probing type of fact finding which characterized the site visits held with the other proposers, both because of this lack of time to review the proposal and formulate questions as well as the nature of the group meeting itself. Nevertheless, the panel recognizes the great scientific ability, sincerity, and medical skill of the Mayo Clinic and feels certain that, if backed by an expansion of the University of Minnesota at Rochester, this institution could be the site of a great medical school.

In keeping with the guidelines given the panel, its members believe that the Mayo School of Medicine will be more national than state in scope, and hence will tend to attract most of its students from outside the State and return them to other states as well. The panel, therefore, does not look upon the Mayo proposal as a replacement for that of any of the others, which they feel, are more apt to supply physicians to the actual family practice of medicine in Minnesota.

Hennepin County General Hospital Proposal

The Advisory Panel agreed that the Hennepin County General Hospital (HCGH) is and should continue to be a major institution providing a full range of high quality health care. This hospital also has a remarkable record of attracting interns and residents who are graduates of many American medical schools, including the University of Minnesota. Interns and residents tend to practice in the state or region in which they take these training programs; thus Hennepin County General Hospital provides significant physician manpower to Minnesota.

Changing Role of the Teaching Hospital

The Panel discussed at length the future of public hospitals such as the HCGH. Many have predicted that this type of hospital will be eliminated from the American scene. However, it is generally agreed that those institutions with innovative policies and programs will attain new levels of achievements in the field of community medicine, undergraduate medical education, graduate medical education, continuing education, as well as education in many of the health sciences. Such institutions will continue to provide significant health care in the area, and should continue clinical research. In the case of the HCGH, a new teaching facility is essential if it is to continue to attract large numbers of patients and to attract new full-time staff which can develop and implement redefined roles and responsibilities. The professional staff and administration should create soon a professional fees plan so that an orderly transition can occur as the hospital attracts a higher percentage of private patients and patients with insurance providing hospital and professional payments. The HCGH should recognize that this will become an important source of income.

University Relationships

The HCGH has had a long tradition of close working relationships with the University of Minnesota College of Medical Sciences. The Panel believes that this relationship should always be kept in good order because both institutions will be strengthened by a meaningful partnership. A second class staff or educational program must not be allowed to develop at HCGH.

Expansion and New Programs

The Panel approves the proposed expansion of staff, students, interns, residents and new programs under Plan I (see p. 20) using the present physical facility. This should be considered an interim program because the HCGH cannot operate long in its obsolete plant. Hopefully, a new 600 bed teaching hospital can be funded and constructed which would would allow Plan II of HCGH (see p. 20). The latter plan would permit a substantial increase in the number of interns, residents, and other health personnel receiving their education at HCGH. Increasing the number of interns and residents at HCGH may be as important as increasing the number of physicians and improving health services in Minnesota.

The Panel could not study in depth the best location of a new HCGH or the methods of providing capital funds for construction. However, in general, it approved the recommendations of the Booz-Allen-Hamilton plan concerning these two items.

The Panel highly endorsed the new programs of the HCGH including the establishment of comprehensive neighborhood health care centers, the establishment of family practice residency programs, expansion of teaching affiliations with selected private hospitals, and expansion of allied health science education. The HCGH should contribute to the improvement of the community's total health care system, and should be a major resource of physicians and other health manpower to Minnesota.

Dr. Glenn W. Irwin
Dr. Paul Feldstein

Minneapolis Medical Center, Inc.

The members of the Advisory Panel were particularly interested in this unique proposal to combine the resources of five geographically proximate institutions into a single hospital complex which would offer internship, residency and allied health educational programs. It was our understanding that the following institutions would comprise the Minneapolis Medical Center, Inc. (MMCI); Kenny Rehabilitation Institute, Mount Sinai Hospital, Lutheran Deaconess Hospital, Northwestern Hospital, and Childrens' Hospital. Dr. L. O. Bradley, President of MMCI, told us that a few days prior to our visit three of the five institutions had agreed to construct a single physical facility which would include the Kenny Rehabilitation Institute, the Childrens' Hospital and Lutheran Deaconess Hospital. This facility would be located near the Mount Sinai and Northwestern Hospitals and not in suburbia, which had apparently been discussed. These

three institutions would remain autonomous but would share the same structure and many supporting services.

Educational Programs in Community Hospitals

The proposal of the MMCI is to be commended. The strengthening of educational programs in community hospitals can be an important resource of physicians and other health personnel for there will need to be full-time educators which the hospitals cannot fund alone. MMCI estimates that approximately 50 percent of their financial needs can be derived from the hospital group, and that the other 50 percent should be secured from the State for these educational programs.

It is estimated that $10,000, including fringe benefits, will be required per year for each graduate student (intern and resident). Initial estimate of staffing was placed at $75,000; however, if an adequate number of qualified full-time educators were to be recruited, this sum seems inadequate.

MMCI plans to build a physicians' professional building near the complex of hospitals accommodating perhaps 100-125 doctors. There are plans to improve and extend emergency services, centralize pediatrics in the new Childrens' Hospital, create new training programs such as a new practitioner category combining pediatrics and internal medicine, and to make a greater contribution to medical manpower for Minnesota.

At the present time the hospitals in the MMCI complex have too few interns and residents and many present are graduates of foreign medical schools. It will take a great effort to establish the many objectives and programs outlined, however, there seems to be determination to achieve.

The Panel concluded that the proposal of the MMCI was an important one but felt that several accomplishments needed to be made before the State made substantial financial commitment to this institution. The relationship to the total community health program including the Hennepin County General Hospital and the University of Minnesota College of Medical Sciences was not clarified. The Panel was not certain about decisions to construct new facilities or their locations in the Model Neighborhood, or whether the various hospital boards were organized to support this innovative program.

If the above uncertainties are resolved, the Panel would likely recommend State support of this proposal.

The Report of the Medical Economists on Cost-Benefit and Related Problems

It is extremely difficult to examine the various proposals from the point of view of cost effectiveness. As computed, the cost effectiveness ratio is based on the number of physicians who would remain to practice within the State of Minnesota. Obviously, this underestimates the total benefits to the nation since—all other things being equal—one would prefer a program which had external benefits to the nation, say in the number of physicians that leave the State of Minnesota to practice elsewhere. Furthermore, even from the more limited point of view of the State of Minnesota, one must recognize that the *distribution* of physicians within the State—in geographic terms and in terms of the type of practice and the patients served—is of major importance. This was the point of view taken by the Committee. It is, therefore, necessary to recognize that the geographic location of the physicians (perhaps, a function of the philosophy and program in a new or expanding institution) will have an impact on the effectiveness side and, therefore, alter the cost effectiveness ratio. To view the cost effectiveness ratio as a meaningful ratio when the benefits are computed only by estimating the number of physicians staying within the state is to underestimate the total impact and the differences between programs.

Similarly, there are grave problems concerning the cost side of the ratio. The assumptions that the various proposals make are rather different, some do include and others do not include capital costs, some are concerned with costs to State government only, others are concerned with total costs (Federal, State and private), and so on. Finally, of course, considerable judgment is required as to whether the programs outlined in the various proposals could be mounted successfully for the sums requested, would work effectively to produce the output that is claimed for them. Are they really adequate descriptions of what would occur, as contrasted with what one would like to have occur?

A National Market for Physicians

In examining the various proposals it should be noted that they can be classified into two major categories: those relating to the education of undergraduate physicians and those relating to internship and residency programs. We will discuss these in order. The training and education of a physician

is a time-consuming and expensive process. Further, given the fact that there exists a national market for physicians, it is by no means clear that this training can be financed by individual States with assurance that they will receive an adequate return on their investment. As is well known, this is one of the important arguments for Federal support for medical education. The Federal government, of course, does already support educational institutions in their research activities, but it does not adequately support the educational process itself. Obviously, the Federal involvement in research arises because research and its findings transcend individual state lines. This is not to say that individual states do not support research activities, indeed they do. They do so, however, for prestige reasons and because the research effort is, on occasion, intertwined in a fundamental way with the teaching effort. Major expansion of research, however, has required Federal financing. So it should be with education. But pending such new arrangements, what can Minnesota do?

New Patterns of Organization

If the State of Minnesota is concerned with the quality of care, with the number of physicians, with the types of people that they see, with family practice and matters of this kind, it might be well advised to consider utilizing its contrained budget to establish new patterns of organization and new structures for the delivery of medical care. This would be particularly necessary in the rural and outlying areas of the state, although it would also have to be undertaken in the inner city. No proposals were received that would really develop a system of care where none exists, that would really alter the delivery system or medical practice and organization. This is regrettable.

Even so, the difficulties that the State would face would be significant. Though the State would attract physicians to take advantage of new opportunities, one cannot be certain that sufficient numbers of physicians would be attracted. Nonetheless, it would appear that substantial efforts in this direction should be undertaken. Though the risks of failure are great, the pay-off from success is also very high. But great imagination, political adroitness, willingness to interfere with the "free market," and commitment to State responsibility and concern with the delivery of services—not simply the creation of MD's—is required.

New Types of Personnel

To undertake such a program would, of course, require that the State support the education of new types of personnel to work in conjunction with, and under the supervision of, the practicing physician. This training and education process would not be as costly as is the case for physicians. Even were this done, the State of Minnesota could argue that it would be extremely useful to have additional medical school graduates. The number of additional physicians needed under such conditions, however, would be less than would otherwise be the case.

The Existing Medical School

The effectiveness-cost ratio, all other things being equal, is surely likely to be greater for the expansion of an existing medical school than would be the case in the creation of a new one. While, traditionally, the data cited for the costs of educating a medical student are average data, it is generally agreed that the marginal costs incurred in adding additional students to an already existing institution are likely to be significantly less than the average costs for the existing student body and surely than would be the case for the new medical school. Thus the expansion, within reasonable limits, of the existing medical school at the University of Minnesota would, on the face of it, appear to be less than the costs of creating a new school. However, this abstracts from a number of important questions:

1. Can the expansion at the University of Minnesota be of sufficient magnitude to markedly assist the State of Minnesota?
2. Would the new program at the University of Minnesota increase the likelihood of students staying within the State of Minnesota and practicing in areas and a type of medicine that Minnesota needs?
3. Are the geographic considerations and externalities involved in raising the quality of medical care in an area by having a medical school in that area significant?

It is not easy to determine the answers to these questions. Nevertheless, it would seem that the University does have plans that would markedly improve the situation for the State of Minnesota. Since these are not likely to involve higher costs than would be involved in equivalent expansion of MD's by the creation of a new medical school (because marginal costs are lower than average costs for expansion), it would seem that we should look upon this proposal with favor. As I calculated, the University of Minnesota would require

about $18,500 per MD graduated (via expansion of the entering class). This compares with significantly higher costs for the other alternatives. It would seem that the costs at NAME would be in the order of $24,000 and in Duluth would be in the order of $28,000. This particular cost cited is for the first program and mainly that of expanding the first year class to 200. Program 2 which involves increasing the transfers from North and South Dakota by 25 is a very inexpensive program (even if scholarships are added to the cost of $7,600 per graduate). The third program which involves permitting the students to graduate in three years instead of four is by far the least expensive. The additional costs (even including scholarships) are very small and it would appear that if a student desires to graduate in three years the curriculum and program should permit it.

Proposed Sites for a Second School

It is difficult to assess adequately the cost effectiveness of the NAME and Duluth programs. These programs, of course, are yet to begin and their costs are surely not very predictable at this point in time. It, of course, is argued that NAME would be less expensive to the State because of the significant private sums that can be raised but one is not certain that this is the case. Alternatively, it can be argued that Duluth would involve some savings in that the science program could serve the rest of the campus as well as the medical school. Clearly there are considerations that are very difficult to put into a cost effectiveness exercise.

It should be noted that the NAME proposal faces a difficulty in that the stronger the link with the University of Minnesota, the less the likelihood that sufficient private funds could be raised. Alternately, the weaker the link the less the likelihood that Federal construction funds would be available. Thus, some significant problems are posed. Duluth, on the other hand, does not face these problems. However, there are those who might argue that it is not at all clear that the high quality can be built into the Duluth situation which at this point does not have the necessary science base. However, this argument could certainly be made *vis-à-vis* a number of new medical schools, some of which, of course, are still on the drawing boards, but others of which have in fact been successful.

It would appear that the chances of mounting a radically different program that would encourage family practice would be significantly greater at Duluth than in St. Paul. The competition with the University of Minnesota Medical School and the desire to compete in terms of turning out the same product is likely — for prestige reasons — to be greater in St. Paul than in Duluth; i.e., the goals as defined by Duluth are not likely to be different than the goals in Minneapolis. The Duluth school would surely raise the quality of care in the northern areas of the state, in northern Wisconsin and to the West. These benefits are not to be ignored and not to be taken lightly.

It is not at all clear what the particular advantage of a new school in St. Paul would be (unless, of course, that school did succeed in defining for itself a different role from that being defined for itself by the Minneapolis Medical School). In any event, a new school in St. Paul would do little to help raise the standards in the North. It should be noted that the hospitals in Duluth are more than adequate to serve the needs of a new medical school. It should also be noted that in the absence of a medical school the quality of care might actually decline from its present levels as these hospitals find it more and more difficult to mount effective internship and residency programs.

The Mayo proposal is the most difficult to judge. The necessary cost figures are not really available at this time. It is unlikely that the Mayo proposal would involve less expense than would be the case with the other medical schools. It surely can hardly be anticipated that it would be cheaper than the NAME proposal. While Mayo could undoubtedly raise outside funds, NAME contends that they would also be able to do so. But it would seem quite unlikely that the philosophy of Mayo would be likely to lead students into the geographic areas that they might go to after education in Duluth. It would seem that a new medical school founded by Mayo might well be considered a national resource and should be supported by the Federal government. While one would not have reservations concerning such a medical school in terms of quality and teaching staff, one can have considerable reservations whether such a school would in fact meet the needs outlined by the Senate Committee.

Graduate Education

The residency programs that have been proposed fall into a different category. They are intimately linked with the expansion program at the University of Minnesota and indeed one of the benefits of the University expansion can be considered the expansion of the internship and residency program. In a sense, therefore, these proposals can best be

measured in terms of the quality of the program rather than in terms of the cost effectiveness.

It should be clear that a number of the supporting data for proposals by Hennepin County General Hospital and the Minneapolis Medical Center are very very rough. The data supporting the Hennepin proposal leave much to be desired. Nevertheless, it is not likely that other units could do the equivalent job for substantially less sums. The Hennepin proposal, it would seem, should be favored on the basis of the quality of existing programs and because of their long experience with the University of Minnesota Medical School. The same probably should be done with the St. Paul-Ramsey Hospital and the Minneapolis Medical Center, even though St. Paul-Ramsey did not submit a formal proposal.

I would calculate the Hennepin County General Hospital proposal as involving costs considerably higher than those cited in the proposal itself; it would seem that they have only 12 residents a year graduating, rather than the 23 that are used for their calculations; the latter figure more accurately represents the total number of residents at any one time. The proposal by the Minneapolis Medical Center, therefore, turns out to be less expensive than that of Hennepin County General. But this is largely due to the fact that only 50 percent is contributed by the State. It should be clear that the taxpayer costs should be an important consideration. Nevertheless, private monies are not to be discounted completely. Private costs are costs and since private monies may be unavailable at some point in the future, the State has to consider the possibility that it may be asked to bear these costs.

Conclusions:

On balance then it would seem that one would want to follow the following course of action:

1. Favor the expansion of the University of Minnesota Medical School, in particular by expanding the enrollment in the first class and by shifting, insofar as possible, to a three-year program. It is also possible that one may want to favor the expansion of enrollment of North and South Dakota graduates in light of the fact that this expansion does not require significant commitment of funds.
2. Favor the development of a new medical school at Duluth.
3. Support the further investigation of the possibilities offered by Mayo and NAME, in light of the fact that at some date in the future federal funds may be available for medical education on a stipend-per-student basis.
4. Favor the expansion of the internship and residency program in the hospitals associated with the University of Minnesota Medical School that can support such expansion. In particular this would appear to be Hennepin and St. Paul-Ramsey.
5. Favor the active participation by State bodies in the development of new patterns of care, delivery systems, etc. Though this is not spelled out in detail, it may well involve the largest "payoff."

DR. RASHI FEIN

General

The State of Minnesota should mobilize all of its many relevant resources to improve the distribution, effectiveness and efficiency of medical care. The fullest possible use should be made of the Regional Medical Programs to bring services from the medical teaching institutions out into the rural areas and urban ghettos. In addition, the Regional Medical Programs should provide continuous studies of manpower needs, resources and distribution in Minnesota. The Mayo Clinic should be encouraged and, if necessary, assisted in developing satellite group practices throughout rural areas in its portion of the state.

For this purpose the state might provide modest sums of planning money (about $50,000-$100,000) to permit the support of proposals which are deemed to have merit.

Construction Costs

The panel can offer nothing which is new toward the solution of the problem of construction. Recent cutbacks in Federal aid plus continuing inflationary costs have made this problem a difficult one throughout the nation. The panel believes that additional Federal funding must and eventually will be provided.

Duluth as a Site for a Second Medical School

The panel believes that the first priority for the location of a new medical school for Minnesota should go to Duluth for the following reasons:

1. It is the site of a branch of the State University capable of developing the academic base directly in association with the new medical school. This academic base could also provide for effective affiliated programs to train much needed allied health professional workers.
2. The two major local hospitals appear capable of supporting the clinical program of a medical school.
3. The start of a new school in Duluth offers great potential for eventual growth to at least 200 students per class. Hence, an investment in a new school here can start a program capable of real expansion at a lower future marginal cost than the creation of additional smaller schools.
4. That area of Minnesota would be aided greatly as regards new house staff and improved medical standards.
5. More students might be expected to settle in nearby areas spreading more physicians about the state. As a special case in point, the teaching programs of modern medical schools are becoming increasingly more involved with their neighboring communities. This should help attract new graduates into the rural areas of Minnesota by making them more familiar with rural medicine during the training phase of their career.
6. The personnel of the University visited by the site team were impressive. Their plans, timetable, dedication and understanding of the problems involved were excellent.

The University of Minnesota

The State should increase substantially its support for the existing state medical school at Minneapolis. It would be disastrous if support for a medical school at any other location meant that the state's present medical school would fail to receive the additional support it requires. It is recommended that (1) the state's support for this school be raised to about $11,000 per student, and then (2) approval should be given for its plans for expansion, shortening its program by one year, further development of its family medicine track and the other features of its proposal. The forty more students provided by this expansion of the first-year class can be trained effectively by this already excellent school. This number will, however, about use up this school's ultimate potential for expansion, so the State should also consider other locations to provide the additional graduates it will require.

The panel has no objection to the plan to admit more graduates of the two-year schools in the Dakotas, but does not believe this offers any practical and predictable hope for meeting the goals which the Senate Subcommittee has set. Many medical schools now compete and will continue to compete actively for these graduates of two-year schools.

Northern Association for Medical Education (NAME)

The panel viewed the NAME proposal with interest. Because of the many uncertainties at the present time it recommends that the proposers be encouraged by means of a "one-shot" legislative planning appropriation sufficient to permit them

to consolidate their position, attract university sponsorship and interest foundation and private contributions. The costs of medical education being as high as they are, the state would do well to keep the door open to the possibility of these major potential sources of private funding.

The Mayo Institutions

The Mayo program does not appear to follow the guidelines as well as that proposed by the other agencies. It more clearly fits the pattern of a national rather than a State school. It will no doubt train top quality specialists and research people to serve our great universities and teaching hospitals. Moreover, its class size will be small and there appeared to be little interest in eventual expansion to a major effort comparable to the potential at Duluth. The University does not possess the same potential for academic backup at Rochester which is available at Duluth and St. Paul.

If the State can do so, however, the panel does recommend a contribution on an annual per-student basis for the Mayo program. There is no doubt that these students will receive excellent medical training in this location.

Hennepin County General Hospital

The program at Hennepin County General should be supported. One of the best ways of attracting new physicians into the State and keeping them there lies in the excellence of the State's internship and residency program. Hennepin County General Hospital is prepared to receive this help now. The Minneapolis Medical Center is not so prepared at present. However, this group of hospitals should be encouraged to continue to plan together, develop their firm relationships with the University of Minnesota and its medical school and further develop their physical plant programs. Eventually this program should also receive State support.

Family Medicine Programs

The Family Practice Program at the University of Minnesota Medical School and Hennepin County General Hospital are particularly worthy of support. The recent approval by the American Medical Association of family medicine as a medical specialty makes these programs even more significant.

Conclusions

In conclusion the panel would like to emphasize that the entire field of medical care, medical research and medical education is in a great state of change. Undoubtedly a major portion of the costs in all of these fields will continue to be met by Federal funds. It can be expected that the extent and diversity of this federal support will increase. For this reason it is important for the State of Minnesota to do the following now:

1. Raise the level of support at its existing school.
2. Begin the efforts toward the development of a new school at Duluth, expanded classes at Minneapolis and support for students who might be trained at the Mayo Clinic.
3. Offer a modest single planning grant to NAME in the hope that this will stimulate the development of more concrete plans.
4. Offer project grants to groups with meritorious plans for improving the distribution of medical care.
5. Support selectively the early developments in family medicine programs.
6. Aid the clinic training programs at certain selected hospitals.

If the state of Minnesota can undertake a program of this nature it will be in the best possible position to make rapid and effective use of existing and future federal funding programs as well as of new scientific discoveries and innovations in medical technology and personnel.

Hearings	Summary of Principal Hearings
September 29, 1967	Introductory statements on the need for a second medical school in Minnesota by Dr. Paul Ellwood, former Chairman, Governor's Commission on Health, Welfare & Rehabilitation; and by spokesmen for the Minnesota State Medical Association and the Minnesota Academy of General Practice.*
October 26, 1967	Representatives from the University of Minnesota outlined plans for expanded programs of education in the health sciences.*
November 17, 1967	Representatives from the American Medical Association and the Association of American Medical Colleges discussed accreditation of medical education; and representatives from the U.S. Public Health Service discussed federal financial support for medical schools.*
December 15, 1967	Meeting held in Duluth. Dr. George Harrell discussed establishment of a new medical school.
January 31, 1968	Representatives from the Dakota medical schools appeared before the Committee.
March 7, 1968	Programs of graduate medical education in Minnesota were described by representatives of teaching hospitals.*
September 19, 1968	Representatives of the Northern Minnesota Council for Medical Education, the Minneapolis Medical Center, Inc., and Hennepin County General Hospital presented their proposals for expanded medical education.
September 20, 1968	Representatives from the Northern Association for Medical Education and the University of Minnesota Medical School presented their proposals for expanded medical education.
October 24, 1968	Representatives from Fairview-St. Mary's Hospitals, Minneapolis, and St. Paul-Ramsey Hospital presented their programs of medical education.
December 12, 1968	Representatives of various consumer organizations, and groups interested in health planning in Minnesota presented their views of the State's problems and the proposed solutions.
March 7, 1969	Dr. George James, Chairman of the Panel of Expert Consultants, presented the panel's report and recommendations.

* Hearings held jointly with House Interim Committee on Medical Education

In addition to the meetings indicated above, some of the Senate Committee members attended hearings scheduled by the House Committee, and other relevant hearings such as those of the Legislative Building Commission. Committee members were also able to meet with the Panel of Expert Consultants in January, 1969. The Committee also met throughout the period of the study to discuss its study procedures, findings and recommendations.

Organizations Representing Consumers and Providers of Health Services Consulted by the Committee

Center for Urban and Regional Affairs, University of Minnesota
Community Health and Welfare Council of Hennepin County
Community Health and Welfare Council of Ramsey County
Governor's Commission on Health, Welfare and Rehabilitation
Hennepin County Department of Public Welfare
Hennepin County Office of Economic Opportunity
Metropolitan Council
Minneapolis City Planning Department
Minnesota AFL-CIO Federation of Labor
Minnesota Chapter, American Academy of General Practice
Minnesota Chapter, American Academy of Pediatricians
Minnesota Farm Bureau Federation
Minnesota Farmers Union
Minnesota Higher Education Coordinating Commission
Minnesota Hospital Association
Minnesota Insurance Information Center
Minnesota Society of Internal Medicine
Minnesota State Board of Health
Minnesota State College Board
Minnesota State Junior College Board
Minnesota State Medical Association
Minnesota State Planning Agency
Model Neighborhood Policy and Planning Committee, Minneapolis
Northlands Regional Medical Program
Office of Economic Opportunity, State of Minnesota
Pilot City Health Center, Minneapolis
Ramsey County Citizens Committee
Ramsey County Department of Public Welfare
Saint Paul Metropolitan Improvement Committee
Twin Cities Hospital Planning Council
United Auto Workers
Upper Midwest Research and Development Council
Urban Coalition, Minneapolis

List of Witnesses who Presented Testimony on Medical Education

Mr. Robert Belsley, Chief of the Progress Review Section, Educational Facilities Branch of the Bureau of Physician Manpower, Department of Health, Education, and Welfare, Washington, D. C.

Dr. Eldon Berglund, Chief Pediatrician, St. Mary's Hospital, Minneapolis

Dr. Samuel Boyer, Physician and President, Northern Minnesota Council of Medical Education, Duluth

Dr. L. O. Bradley, President and Chief Executive Officer, Minneapolis Medical Center, Inc.

Dr. R. P. Buckley, Physician and Chairman, Committee on Medical Education, Minnesota State Medical Association, Duluth

Dr. James C. Cain, Physician and Member, Board of Medical Examiners, State of Minnesota, Rochester

Mr. Cy Carpenter, State Secretary, Minnesota Farmers Union, St. Paul

The Honorable Robert F. Christensen, State Legislator, District 48b, St. Paul

Dr. Edward Ciriacy, Physician and President, Minnesota Academy of General Practice, Ely

Dr. R. W. Darland, Provost, University of Minnesota Duluth, Duluth

Mr. Walter V. Dorle, President, Northwestern State Bank, and President-elect, St. Paul Chamber of Commerce, St. Paul

Professor Bright Dornblaser, Director, Program in Hospital Administration, School of Public Health, University of Minnesota, Minneapolis

Dr. Paul M. Ellwood, Jr., Executive Director, The American Rehabilitation Foundation, Minneapolis

Dr. Abraham Falk, Chief of Staff, Veterans' Administration Hospital, Minneapolis

Dr. Davitt A. Felder, Surgeon and President, Northern Association for Medical Education, St. Paul

Dr. Ellen Z. Fifer, Director of Health Planning, State Planning Agency, State of Minnesota, St. Paul

Mr. Archie Givens, Jr., Administrator, Pilot City Health Center, Minneapolis

Dr. John Haavik, Director, Duluth Mental Hygiene Clinic, Duluth

Mr. A. Russell Hanson, Administrative Associate, Mayo Graduate School of Medicine, Rochester

Dr. George T. Harrell, Dean, Pennsylvania State University College of Medicine, Hershey, Pennsylvania

Dr. Theodore H. Harwood, Dean, University of North Dakota Medical School, Fargo, North Dakota

Mr. Richard C. Hawk, Executive Director, Minnesota Higher Education Coordinating Commission, St. Paul

Dr. Lyle Hay, Director of Medical Education, St. Barnabas and Swedish Hospitals, Minneapolis

Mr. John W. Hedback, Executive Director, Northern Association for Medical Education, St. Paul

Dr. Mellor R. Holland, Associate Dean, School of Dentistry, University of Minnesota, Minneapolis

Dr. Howard L. Horns, Physician and Member, Board of Medical Examiners, State of Minnesota, Minneapolis

Dr. Robert B. Howard, Dean, College of Medical Sciences, University of Minnesota, Minneapolis

Mr. Otto M. Janke, Executive Director and Superintendent, St. Paul-Ramsey Hospital and Medical Center, St. Paul

Dr. George Knabe, Dean, School of Medicine, University of South Dakota, Vermillion, South Dakota

Dr. John P. Knoedler, Pathologist, St. Mary's Hospital, Duluth

Dr. Elmer Learn, Vice President, University of Minnesota, Minneapolis

Dr. Wallace Mathews, Physician and President-Elect, Minnesota Academy of General Practice, Mankato

Dr. Austin M. McCarthy, Physician and President, Board of Medical Examiners, State of Minnesota, Willmar

Dr. Robert J. McCollister, Assistant Dean, University of Minnesota Medical School, Minneapolis

Dr. Frank W. McKee, Director, Bureau of Health Manpower, U. S. Public Health Service, Department of Health, Education, and Welfare, Washington, D.C.

Mr. Francis R. Meisch, Architect, Haarstick, Lundgren and Associates, St. Paul

Dr. H. Dawes Miller, Director of Medical Education, Fairview Hospital, Minneapolis

Dr. Malcolm Moos, President, University of Minnesota, Minneapolis

Mr. William E. Osborne, Administrator, St. Mary's Hospital, Minneapolis

Dr. B. F. Pearson, Physician and Member, Board of Medical Examiners, State of Minnesota, Shakopee

Dr. R. H. Puumala, Physician, Cloquet

Mr. Arthur Poore, Executive Secretary, Board of Medical Examiners, State of Minnesota, St. Paul

Dr. Richard B. Raile, Medical Director, Hennepin County General Hospital, Minneapolis

Mr. David Roe, President, Minnesota AFL-CIO Federation of Labor, St. Paul

Mr. Stephen Rogness, Executive Director, Minnesota Hospital Association, Minneapolis

Dr. William H. C. Ruhe, Director Council on Medical Education, American Medical Association, Chicago, Illinois

Dr. Erwin Schaffer, Dean, School of Dentistry, University of Minnesota, Minneapolis

Dr. Alvin Schultz, Chief of Medicine, Hennepin County General Hospital, Minneapolis

Dr. Donald K. Smith, Vice President, Administration, University of Minnesota, Minneapolis

Dr. Cheves Mc C. Smythe, Associate Director, Association of American Medical Colleges, Chicago, Illinois

Dr. George W. Starcher, President, University of North Dakota, Fargo, North Dakota

Dr. Gordon J. Strewler, Physician and Secretary, Northern Minnesota Council for Medical Education, Duluth

Dr. Martha Strickland, Director of Medical Education, Children's Hospital, St. Paul

Dr. John V. Thomas, Physician and Officer, Northern Minnesota Council for Medical Education, Duluth

Dr. Francis B. Tiffany, Physician and Chief of Staff, St. Paul-Ramsey Hospital and Medical Center, St. Paul

Dr. Gerald Tracy, Physician and Chairman, Commission on Medical Services, South Dakota State Medical Association, and Chairman, Committee on Medical School Affairs of the Commission, Watertown, South Dakota

Dr. Robert A. Ulstrom, Associate Dean, College of Medical Sciences, University of Minnesota, Minneapolis

The Honorable George Unruh, Legislator, State of North Dakota, and Chairman, Legislative Research Committee

Mr. Robert Van Hoef, Executive Director, St. Paul Metropolitan Improvement Committee, St. Paul

Mr. Paul J. Vogt, Administrator, Hennepin County General Hospital, Minneapolis

Mr. Stanley Wenberg, Vice President, University of Minnesota, Minneapolis

Mr. John Westerman, Administrator, University Hospitals, University of Minnesota, Minneapolis

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Staff Services

Professional assistance to the Senate Committee was engaged in November, 1967 through a contractual arrangement with the American Rehabilitation Foundation (ARF) of Minneapolis.

The Committee wishes to give special recognition to Mr. Earl J. Hoagberg and Mr. William Hoy O'Brien, of ARF, for their valuable assistance in preparing this report and in assembling the data upon which it is based, as well as for staff services performed throughout the course of the study.

References

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2. Ibid, pg. 63.
3. **Health Manpower in the Upper Midwest,** Louis W. and Maud Hill Family Foundation, St. Paul, June, 1966, pg. 33.
4. Ibid, pg. 33
5. The 11 hospital planning regions have subsequently been consolidated into the comprehensive health planning areas shown in Figure 4, pg. 15.
6. Ivan J. Fahs, et. al., "Physician Migration: A Problem in the Upper Midwest; **Journal of Medical Education,** Volume 43, p. 739, June, 1968.
7. Ibid, pg. 737.
8. William H. Stewart, "Medical Education and the Community," **Medical Annals of the District of Columbia,** Vol. 35, No. 8, August, 1966, quoted by Rashi Fein, **op. cit.,** pg. 69.
9. A recent study found that only "33.4% of Minnesota's physicians are GP's . . . by primary classification; by adjusting for functional specialization the percentage becomes 30.9%."
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12. **The Crisis on Medical Services and Medical Education;** Report on Exploratory Conference, February 20-25, 1966; Sponsored by the Commonwealth Fund and Carnegie Corporation of New York.
13. **Quality & Equality: New Levels of Federal Responsibility for Higher Education,** Carnegie Commission on Higher Education, December, 1968. Pg. 32.