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THE FUTURE AVAILABILITY OF MEDICAL STUDENTS

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File Dr Stewart's papers

Although much has been written about the need for more and larger medical schools in Canada and the United States, there seem to be serious gaps in the factual information on which to base sound planning as to the number and capacity of these schools.

In recent years the chief argument for the enlargement of Canadian medical schools has been based on the need for more physicians. The Royal Commission on Health Services (1) and the special reports to that Commission by MacFarlane (2), and Judek (3) contain valuable data on the number of physicians required to provide adequate health services for the Canadian people. It seems to be assumed by these writers that simply increasing the size and number of medical schools will produce the required quota of graduate practitioners. If Canada needs 1,500 new physicians a year, it is implied, we must increase the medical schools to a capacity sufficient to graduate 1,500 physicians. Obviously, this happy outcome will follow only if the supply of first year medical students is sufficient to fill the classes of the enlarged medical schools. The adequacy of the source of students seems to have received much less attention than the need for physicians.

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I wish to discuss four guidelines for estimating future enrolment in Canadian medical schools, and to comment on their relative value or lack of it. The four guidelines are:

(1) Applications to medical schools;

(2) Proportion of the general university student body choosing medicine as a career;

(3) The ability of a population to produce an annual "crop" of medical students of adequate number and quality;

(4) The requirement for physicians.

Applications to Medical Schools:

Until recently, it has been assumed by most Canadian physicians and by the public that there is a large pool of potential medical students willing and anxious to study medicine. This impression has been heavily supported by annual news reports each September comparing the number of applicants with the number of students accepted into Canadian medical schools. The usual headline news story stated that only one out of every three or four or five qualified students got into the crowded medical schools. It was recognized by some medical educators that these figures were misleading, but until 1966 there was no national reporting of medical school applicants, and hence no source of reliable statistics. Newspapers cannot be criticized for presenting the data as they were compiled by each school, but it is unfortunate that the research division of the Royal Commission did not recognize the weakness of its statistical data and that the Association of Canadian Medical Colleges did not take earlier action to study this problem.

Data on the thirteen medical schools can not be combined to provide the national picture because a substantial number of students apply to several schools. For example, last year over forty Canadian students applying to Dalhousie from areas other than the four Atlantic Provinces had applications on file at two to five other Canadian medical schools. Many Quebec students apply to Laval and the University of Montreal and now to Sherbrooke as well. Many in Ontario apply to two, three or all four schools.

In addition, applications are often little more than enquiries by students who have not fully completed the premedical requirements of the school. Many other students have barely achieved the minimum requirements after supplemental examinations or repeating several courses. Medical schools have found from experience that the failure rate in this group is very high and most schools do not consider them as qualified candidates. There is a wide difference then between the number of applications and the number of applicants, and a still wider gap between the number of applicants and the number of qualified candidates who have a reasonable chance of success in the study of medicine.

The report of Fish and Macleod (4) on the 1965 applicants to the four Ontario medical schools showed that the number of fully qualified applicants who could not be accommodated was very small, although the ratio of applicants to available places was well over four to one in every school, and in one it was eighteen to one.

This pilot study in Ontario resulted in the Association of Canadian Medical Colleges setting up a central reporting system, and the data on the entering class of 1966 were described by Fish and Clarke in the Education Number of the Canadian Medical Association Journal this spring (5). There were 4,660 applications to the twelve schools for approximately 900 places, an apparent ratio of more than five to one. An additional 300 places are not open to competition at the beginning of the first professional year, since the students of some Ontario schools are assured of admission if successful in the premedical courses to which they were admitted from high school. Only 2,852 of the 4,660 were applications from Canadian students. When multiple applications were deleted, these represented only 1,767 applicants. Of these only 696 or 40.3 per cent were clearly and unequivocally acceptable. Sixty-six marginal students were also accepted into Canadian schools as were 130 multiple applicants who were rated acceptable by one school but marginal or unacceptable by another. The total accepted was 892. The crucial figure is this. Only 36 other Canadian students rated as acceptable by one or more schools failed to gain admission to any Canadian medical school in 1965-66, not quite enough to add three more students to each of the thirteen existing schools. Nevertheless, three new medical schools are being planned at McMaster, Calgary and Memorial Universities.

In spite of the two reports by Fish and his associates in 1965 and 1966, the majority of physicians and medical educators seem still to be under theimpression that there is a large pool of

of suitable students to be channelled into the enlarged or new medical schools. Faith dies hard! Everyone has heard of someone who knew a man whose nephew had a brilliant friend who was rejected by all medical schools! Firsthand information from the Association of Canadian Medical Colleges suggests that rejections of fully qualified students

Standardization of our criteria for reporting to ACMC is desirable. How does it happen that so many students are labelled unacceptable and marginal by one school and acceptable by another?

Is the academic standard set higher in one than the other because of its large number of applicants in relation to capacity, or does it rate the unacceptable as unlikely to succeed in medicine?

Each school can and should be free to set its standards where it wishes, but it is important to know whether it is purposely excluding some who could be educated in medicine.

One American medical educator suggested in a personal communication that the number of medical students may be estimated from the total population at a rate of five from a population of 100,000 each year, or 50 per million. He stated that this was his impression, but he had no data to back it up.

In an effort to validate this guideline, an analysis was made of the enrolment by state in the U. S. A. The Journal of Medical Education publishes annually a considerable body of statistics on U.S. medical schools, including the home state of first year medical students. From these published reports (6,7,8,9,10) enrolment rates per million have been calculated for each state and the District of Columbia for the years 1961 to 1965 inclusive. The population

estimates were based on a straight-line extrapolation of the U. S. census figures for 1950 and 1960 (11). Rates per million were calculated by state for each of the five years, but for obvious reasons of space, only the five-year averages are shown in Table I.

TABLE I

AVERAGE NUMBER OF FIRST YEAR MEDICAL STUDENTS IN ALL U.S. MEDICAL SCHOOLS 1961 to 1965 GROUPED BY HOME STATE AND ENROLMENT RATE PER MILLION OF THE STATE POPULATION

	Estimated Population(1)	Average Annual Enrolment(2)	Enrolment Rate per Million(3)
New England			
Maine*	987,000	19	19
New Hampshire	628,000	16	26
Vermont	393,000	18	46
Massachusetts	5,287,000	227	43
Rhode Island*	880,000	32	36
Connecticut	2,694,000	119	44
Middle Atlantic			
New York	17,367,000	1,305	75
New Jersey	6,436,000	378	59
Pennsylvania	11,565,000	620	54
East North Central			
Ohio	10,234,000	448	44
Indiana	4,881,000	238	49
Illinois	10,492,000	500	48
Michigan	8,258,000	342	41
Wisconsin	4,108,000	175	43
West North Central			
Minnesota	3,543,000	190	54
Iowa	2,800,000	147	52
Missouri	4,428,000	158	36
North Dakota	635,000	44	69
South Dakota	690,000	32	46
Nebraska	1,435,000	106	74
Kansas	2,260,000	114	50

	Estimated Population(1)	Average Annual Enrolment(2)	Enrolment Rate per Million(3)
South Atlantic			
Delaware*	485,000	19	39
Maryland	3,329,000	172	52
Dist. of Columbia	752,000	53	70
Virginia	4,162,000	147	35
West Virginia	1,815,000	77	42
North Carolina	4,703,000	141	30
South Carolina	2,464,000	102	41
Georgia	4,093,000	181	44
Florida	5,606,000	240	39
East South Central			
Kentucky	3,065,000	155	51
Tennessee	3,651,000	204	56
Alabama	3,327,000	108	32
Mississippi	2,178,000	106	49
West South Central			
Arkansas	1,750,000	124	71
Louisiana	3,428,000	179	52
Oklahoma	2,358,000	127	54
Texas	10,141,000	355	35
Mountain			
Montana*	699,000	28	40
Idaho*	691,000	26	38
Wyoming*	342,000	13	38
Colorado	1,883,000	85	45
New Mexico	1,032,000	25	24
Arizona*	1,467,000	47	32
Utah	951,000	68	72
Nevada*	321,000	8	25
Pacific			
Washington	2,994,000	101	34
Oregon	1,844,000	83	45
California	17,256,000	583	34
Alaska*	256,000	3	12
Hawaii*	672,000	24	36
TOTAL	187,716,000	8812	47

* No medical school in the state

(1) Based on straight line extrapolation from 1950 to 1960 census figures.

(2) Based on reports in the Journal of Medical Education. (References 6 to 10). Average to nearest whole number.

(3) Enrolment rate to nearest whole number

The grouping of states by the average five-year enrolment rate is shown in Table II.

TABLE II

CLASSIFICATION OF STATES (1) BY MEDICAL STUDENT ENROLMENT RATE

Enrolment Rate per million	Number of States
0-19	2
20-29	3
30-39	14
40-49	16
50-59	10
60-69	1
70-79	5

(1) Including the District of Columbia

Thirty-five of the fifty-one governmental units had an average annual enrolment of less than 50 per million; sixteen exceeded this figure. The average was 47 and the median between 45 and 46. However, most medical educators believe that a class of 60 per year is the smallest that can be considered an economic unit and only six exceeded this rate, the highest being 75 in New York.

Of the five states with an enrolment rate below 30, four have a population of less than a million - Alaska, Maine, New Hampshire and Nevada — while the fifth, New Mexico, only barely exceeds a million. However, size may not be the significant factor, since three of the six areas with enrolment rates of sixty or more also have a population of less than a million (North Dakota, Utah and the District of Columbia) and two others (Arkansas and Nebraska)

have only about one and a half to one and three-quarter millions. (As will be shown later, the highest rate in Canada has been in the smallest province, Prince Edward Island) The only large state with a high enrolment rate is New York with 75 per million, the highest rate for the fifty-one areas.

Whether there is a medical school in the state, or in a closely adjacent state, seems to be a more important factor. Of the five states with low enrolment, three have no medical school within the state, Alaska, Nevada and Maine, but the first two of these have too small a population to warrant one. Six of the fourteen states with a rate of 30 to 39 are also without a medical school. In fact, all ten of the states with no medical school have enrolments below the median of 45 or 46 students per 1,000,000. Nevertheless, a medical school within the state does not ensure a high enrolment. Fifteen states which have their own medical schools are also below the median and two N.H. & N.M. are below an enrolment rate of 30. In several states the enrolment of residents of that state is consistently below the capacity of the local medical school. The "ceiling" on enrolment is not, therefore, always determined by the capacity of the local schools.

As a further check on the stability of the higher rates, and in an effort to determine whether there is a "ceiling" at which they tend to level off, rates were calculated at five-year intervals from 1950 to 1965 as shown in Table III.

TABLE III

ANNUAL ENROLMENT RATES PER MILLION OF FIVE-YEAR INTERVALS, 1950 to 1965, IN SIX STATES

State	Enrolment Rate per Million Population			
	1950	1955	1960	1965
Arkansas	52	60	62	68
District of Columbia	60	69	71	81
Nebraska	91	73	71	72
New York	56	66	62	77
North Dakota	79	59	58	75
Utah	78	76	67	75

Rates exceeding 80 occurred only occasionally, and were not maintained for long; for example, the rate of 91 in Nebraska in 1950 was sharply reduced in 1951, remaining relatively constant since then. The rates for New York during the five years 1961 to 1965 suggest a levelling off at 77 or 78, but insufficient data are available to establish with certainty whether this apparent "ceiling" might be raised.

It can be concluded that at the present rate of enrolment, a population of at least one million is required to provide a stable supply of students to an American medical school. Many medical educators believe that a class of 50 to 60 per year is the smallest that can be considered an economic unit, although a few would set the figure as low as 45 per class. In almost half of the states of the U. S. A. a population of one million was unable to provide 45 medical students per year. In the other half of the states a population of a million would supply students for a medical school of 45 to 75 per year, most of them with classes of 45 to 60. If one considers an enrolment of 60 as a minimum economic size, then a population of at least one million is required to provide

sufficient students and in most areas well over one million.

It is emphasized that these rates are based on all students from a state enrolled in any U. S. school. The level of enrolment is imposed not by the size of the local schools but by the total capacity of all U. S. medical schools and the ability of students from New York, for example, to gain admission to any medical school in the country. The capacity of medical schools may be a limiting factor in some areas, but in several states the enrolment rate is far too low to fill the local school. One would like to know how much higher the rates would have been if all acceptable candidates could have been admitted.

Canadian data in Table IV throw further light on this matter because the studies by Dr. Fish provide the additional information on qualified students who were unable to gain admission.

Unfortunately, the excellent statistical reports published annually by the Association of Canadian Medical Colleges (5, 12, 13) show only the enrolment by medical school and not by home province. It is, for example, possible to calculate the enrolment rate of Alberta students in the University of Alberta, but this does not give the full enrolment of provincial students. Some are hidden in the statistics of other medical schools as "out-of-province" students. It has been possible, however, to obtain data for 1961 and 1962 from the lists of first year students which Canadian medical schools usually exchange with each other.

Unfortunately, the 1963 and 1964 exchange of lists was incomplete. However, a special ACMC study has provided data for 1965 (14). Although there were a few blanks in the data obtained by questionnaire in this study, the rates would not have been changed significantly from those shown in Table IV as they were calculated only to the nearest whole number.

TABLE IV

ENROLMENT OF FIRST YEAR MEDICAL STUDENTS IN CANADIAN MEDICAL SCHOOLS BY PROVINCE OR REGION OF RESIDENCE IN 1961, 1962 and 1965

Province or Region	1961 No.	1961 Rate (1)	1962 No.	1962 Rate	1965 No.	1965 Rate
Atlantic Provinces	67	36	69	36	82	41
Quebec	299	57	341	64	342	61
Ontario	294	47	316	50	339	51
Manitoba	54	59	60	64	60	62
Saskatchewan	41	44	42	45	48	51
Alberta	76	57	70	52	90	62
British Columbia	50	31	66	40	68	38
Total	881	48	964	52	1029	53

(1) Per million of estimated mid-year population.

Between 1961 and 1965 the enrolment rose significantly from 881 to 1,029, but the growth was very little in excess of the increase in population and the rates changed only from 48 to 53 per million. This is slightly above the average U. S. rate of 47.

Two of the low enrolment areas are the Atlantic Provinces and British Columbia, but their rates are not as low as the five lowest states in the U. S. A. Newfoundland has the lowest

rate in the Atlantic Region with 27 per million. On the other hand, three provinces (Quebec, Manitoba and Alberta) exceeded a rate of 60 in 1965 as compared with six of the fifty-one U. S. areas, but the Canadian rates were in no case as high as in the five U. S. states with highest enrolment.

Records of the annual enrolment of Atlantic Province students in all Canadian medical schools are available for a longer period. Since in this area one school is increasing its enrolment and at least one new one is being planned, it is well to consider how adequate the supply of students may be. Figures for 1954 to 1965 are shown in Table V. Rates have been calculated for the three-year enrolment from each province, averages being used to minimize the relatively large fluctuations which are not uncommon in provinces of small population.

TABLE V

ENROLMENT IN ALL CANADIAN MEDICAL SCHOOLS
OF STUDENTS FROM THE ATLANTIC PROVINCES
1954 to 1965 AND ENROLMENT RATE PER MILLION POPULATION

Province	1954-56		1957-59		1960-62		1963-65	
	No. (1)	Rate (2)	No.	Rate	No.	Rate	No.	Rate
Nova Scotia	24	35.1	25	35.2	23	30.8	34	44.7
New Brunswick	18	32.9	16	28.0	20	33.4	21	34.0
Newfoundland	8	19.7	8	18.5	13	27.7	13	27.1
P. E. Island	7	70.0	6	60.0	8	76.2	4	40.2
Total	57	32.8	55	30.3	64	33.7	72	36.4

(1) Average to nearest whole number.

(2) Rate per million based on the estimated population of the province for the mid-year of each three-year period and on the average three-year enrolment before "rounding off" to the nearest whole number.

In the first nine years of the twelve-year period from 1954 to 1965 inclusive all qualified students from the four provinces were accepted by medical schools, with 90 per cent enrolling at Dalhousie. In 1965 and 1966 about 8 to 10 qualified students had to be rejected each year because of lack of space. However, in the same period relatively few students were accepted from outside the Atlantic Provinces. The regional enrolment therefore increased from 55 in 1957-59 to 72 in 1963-65. The enrolment rate of 36.4 in the 1963-65 period might have reached 45 if all qualified students could have been accommodated.

With the opening of the Sir Charles Tupper Medical Building at Dalhousie in July, 1967, it will be possible to increase the class size to 96. It is assumed that 10 percent of the students will be from outside the region leaving places for 86 from the four provinces. It is also expected that the same number of Atlantic Province students will go to other Canadian universities as in recent years, an average of fifteen from 1961 to 1965. The enrolment of Atlantic Province students in all Canadian medical schools should therefore reach approximately one hundred in 1967 or a rate of 50 per million. The 150 applicants now being considered at Dalhousie give promise of providing 100 acceptable students, but barely doing so with no excess of qualified candidates.

Memorial University is planning a new medical school with a target date for its opening in 1970. Assuming a class of 40 Atlantic Province students by 1971 — a conservative estimate as to time and number — the increased enrolment at Dalhousie and

Memorial with a few at other schools might reach 140. This would require an enrolment rate of 70 per million. Is this a reasonable goal? It is higher than any Canadian rate, except that occasionally reached by Prince Edward Island, and almost as high as the New York peak.

Stark realism suggests that still another medical school in New Brunswick, as was recommended by the Hall Commission, would be unlikely to contribute materially to the output of graduates unless dramatic means are found to increase recruitment. It would simply reduce the enrolment of the other two schools.

The enrolment of Prince Edward Island students is of special interest. The numbers are small and considerable fluctuation is not surprising since the total population is only 100,000, but the fact that the average enrolment has remained at a high level for about twenty years may be significant. Prince Edward Island has consistently exceeded the other Atlantic Provinces in the proportion of the 18 to 24 year age group enrolled in universities, and until 1962 it exceeded the Canadian average (15). It is under such circumstances of high university enrolment that one would expect the maximum number of students to enter medicine. The highest rates of 70 in the three-year period, 1954-56, and 76 in 1960-62, were not maintained in 1963 to 1965, but in 1967 will again reach 70. The whole Atlantic Region must increase enrolment rates to this level if Memorial and Dalhousie are to have full classes. Can this be done?

To use another example — and show that I have the whole Canadian problem under consideration, not just the east coast — let us consider Alberta where another new school is to be established. Students of that province enrolling in first year medicine at all Canadian universities rose from 76 in 1961, a rate of 57 per million, to 90 students in 1965, a rate of 62 per million. This was the highest rate in Canada that year, matched only by Manitoba. If the University of Calgary adds an enrolment of 40 by 1971-72 as is planned, the enrolment of 130 Alberta students in 1971 will require a recruitment rate of 86 per million, considerably higher than that achieved to date even in the highest year by New York State. Even if 25 per cent of the medical students at Calgary University are from other provinces, the recruitment rate of Alberta students must reach 80 per million.

In summary, the data from Canadian and U. S. sources, while not conclusive, suggest that there may be a maximum recruitment rate of medical students per million of population per year. This is probably somewhere between 75 and 80 when facilities are adequate to accept all qualified students who have a reasonable likelihood of success in the study of medicine. Four Canadian provinces and five states and the District of Columbia in the U. S. A. have achieved levels over 60, but most areas in both countries have produced only 45 to 50 medical students each year per million of population. If there had been unlimited room in Canadian medical schools to accept all qualified students including the 36 rejected in 1965-66, the rate for the whole country would have been only slightly above 55. Building more or larger medical schools

will not improve the supply of students unless something is also done to increase recruitment of good candidates.

Requirement for Physicians

It now seems relevant to consider what enrolment rate is required in order to provide enough graduate physicians to serve the Canadian people. Judek (3) estimated that an enrolment of 1,334 first year medical students would be required each year between 1966 and 1971 as a minimum, not allowing for any increase in population by immigration. With a net immigration of 25,000 or 50,000 per year, he estimated that the enrolment would have to be either 1,392 or 1,453 respectively to provide enough Canadian-trained doctors to serve the total population.

Other estimates have placed the annual quota of new physicians required in Canada at 1,300 to 1,500. From recent studies at Dalhousie it was concluded that 1,260 new physicians would be required by 1972 to provide for a replacement of 2.5 per cent of the physicians lost by death and retirement and to take care of the expected growth in population. Assuming a ten per cent "attrition" in medical schools and a 10 per cent loss of graudates to other countries, chiefly the U. S. A., the first year enrolment in 1967 would have to reach 1,550 to provide 1,260 physicians who could be licensed by 1972.

It must now be emphasized that a first year enrolment of 1,550 students in 1967 would represent an enrolment rate of 77.5 per million per year, as compared with the present rate of 53 in Canada and 47 in the U. S. A. Such rates have not been reached

in any province and the highest five-year average in New York State was 75, with 78 one year.

I suggest that our goals in Canada have to be realistic and I frankly doubt whether increases in the size of the medical schools alone will provide the required number of physicians. If all Canadian provinces could increase their enrolment to the rate reached in four provinces of about 60 per million, the resulting 1,200 students would produce no more than 1,075 graduates at the average attrition rate of 10.4 per cent (16). Even if all of these graduates were retained in Canada, this number would not meet the requirements of the country. An enrolment of 65 per million would provide about 1,160 of the 1,260 physicians required each year if all graduates are persuaded to stay in Canada.

Finally, I should like to point out in Table VI that the projected enrolment of Canadian medical schools by 1971-72 is for 1,586 first year students.

TABLE VI

PROJECTED ENROLMENT OF CANADIAN MEDICAL SCHOOLS (1)

	1967-68	1971-72
U. B. C.	62	80
Alberta	105	120
Saskatchewan	50	60
Manitoba	75	95
U. W. O.	75	100
McMaster	-	35
Toronto	185	250
Queen's	70	75
Ottawa	78	96
McGill	135	135
Montreal	128	150
Laval	125	150
Sherbrooke	64	64
Dalhousie	96	96
Calgary	-	40
Memorial	-	40
Total	1,248	1,586

(1) From reports to A. C. M. C.

At an estimated population of 22 million by 1971, this will require an enrolment rate across the whole country of 71 to 73. Frankly, I think it is unrealistic to expect this large an increase in such a short time unless immediate and forceful methods of recruitment are introduced.

The universities have accepted the challenge that they enlarge their medical schools in number and size sufficient to provide enough physicians. It now remains for the medical profession and the government, which urged this expansion, to assist in the recruitment of students so that the facilities will not be wasted.

Methods of Increasing Recruitment

One would like to think that increased student aid in loans, bursaries, scholarships or free tuition would improve recruitment. A generous program of support for students has been provided in Newfoundland since 1963 and the results of this may be of interest. A grant of $ 800 to $ 1,200 per year is provided to each premedical student or predental student at Memorial University of Newfoundland and $ 2,000 per year to each medical student. Table VII shows the results of this program as evidenced by the number of applicants to Dalhousie Medical School.

TABLE VII

TRENDS IN APPLICATIONS TO DALHOUSIE MEDICAL SCHOOL BY PROVINCE, 1962 - 1966

	N. S.	N. B.	Nfld.	P.E.I.	Total
1962	39	13	18	11	81
1963	44	29	12	4	89
1964	53	21	20	7	101
1965	64	29	37	8	138
1966	71	30	34	6	141

Some of the Newfoundland students enter medical schools in other provinces, but most go to Dalhousie and those who are admitted elsewhere usually make application to Dalhousie as well. The figures are therefore sufficiently complete to indicate trends. In 1962, the year preceding the support program, the number of applicants to Dalhousie was 18. In 1966, this number had almost doubled to 34. However, before assuming a cause and effect relationship, it is well to look at the trends in the other three Atlantic Provinces. A growth in the medical school enrolment was taking place in most Canadian provinces at this time. Prince Edward Island, already at a high level of enrolment, dropped temporarily in the number of medical school applicants in that period; but Nova Scotia applicants rose from 39 in 1962 to 71 in 1966 and New Brunswick from 13 to 30. The rates of increase in the three larger provinces, therefore, are approximately the same. New Brunswick and Nova Scotia had provided no special financial support for pre-medical or medical students, but the rates of increase in these

two provinces were almost exactly the same as in Newfoundland. It would appear that the province with low rates of medical student enrolment are experiencing an upsurge as the general university enrolment grows, but not necessarily related to student financial support.

I would not wish to have these statistics interpreted as opposition to financial support for medical students. I doubt that such support would greatly or quickly increase the number of students entering medicine, but I think that it should be introduced. It is grossly unfair, in my opinion, that Canadian universities have in recent years almost without exception established generous scholarship and fellowship support for all students in an M. Sc. or Ph. D. program, without comparable aid to students in the professional schools. A student in third year science with a superior academic record can choose to become a Ph. D. in Biochemistry or Physiology with assurance of a reasonable income to cover tuition fees and living costs. If he chooses medicine, he has to pay both. More financial aid is required so that the student does not have to make the painful decision of being poor as a medical student and being able to eat three meals a day as a Ph. D. candidate. It is just possible that more financial aid <u>might</u> stimulate recruitment to a rate of 60 to 70 medical students per million of population. However, to date, I can find little to encourage a more optimistic

estimate of future enrolment rates above these levels.

After financial support, and far more important, I would appeal for the active support of the medical profession in a recruitment program. We in medical education need your help as individuals. We have always had the official support of the C. M. A. and its provincial divisions, but individual doctors always wish to air their gripes, to tell how hard they work, how much they abhor red tape and how they fear for the future under medicare. It is a rare exception when I have a first-year student tell me he was encouraged by his local doctor. Most choose medicine in spite of and not because of his advice. If every Canadian doctor would once in his lifetime recruit a good student into medicine who would not otherwise be there, it would help greatly.

Thirdly, I think we have to reduce the need for physicians by better use of paramedical personnel and organization of group practices.

Fourthly, I think medical educators have to review admission standards. Perhaps we can find means of salvaging some of the well-motivated students who have had academic difficulties. This will mean taking larger classes and increasing the staff to provide more individual attention. It will also, without doubt, result in a higher "attrition rate" for which we are already criticized by some. Time does not permit elaboration of these observations on recruitment, which are in any event to be discussed by others.

All Canadian medical schools have been subject to a great deal of pressure to increase their enrolment in order to provide more doctors. My suggestion is that the schools may not succeed in providing more Canadian doctors because there will not be Canadian students to fill the first year classes, and most foreign students do not remain to practise here. I am sorry that my projection must be so pessimistic, but as a scientific epidemiologist I believe in trying to evaluate statistics in the social and medical fields with a due degree of scientific logic. I would be delighted if someone can show that I am wrong on this prediction.

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