FUNDING OF HEALTH SCIENCES RESEARCH IN A FACULTY OF MEDICINE - A CASE STUDY

WESLEY JACOB DRODGE

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FUNDING OF HEALTH SCIENCES RESEARCH IN A FACULTY OF MEDICINE - A CASE STUDY

BY

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science

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ABSTRACT

The purpose of this research was a case study of the factors affecting the funding of Health Sciences Research in the Faculty of Medicine at Memorial University of Newfoundland.

Data was collected from the various sources such as the Faculty of Medicine, the University, the Association of Canadian Medical Colleges, the Medical Research Council, Statistics Canada, and the Association of Universities and Colleges of Canada. Various factors such as grant amounts, numbers, types, sources, numbers of faculty and students, organizational structures, etc., were documented and analyzed.

The findings indicated that while there was growth in funding of Health Sciences Research, more effort needs to be put into increasing the share that the Faculty of Medicine gets from the national total. A concerted effort needs to be taken to ensure that all avenues for potential funding are explored. The success or otherwise of these efforts should be analysed yearly. In addition, the lack of provincial and local research funding needs to be addressed specifically.

Through this study a partial insight was gained into the past and present operation of the Faculty of Medicine and a baseline was established for future research. The methods used should provide useful tools for future researchers.

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The writer wishes to acknowledge, with appreciation, the assistance of many who contributed to the development and completion of this study:

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CHAPTER 1 - INTRODUCTION

1.1 PURPOSE:

One of the objectives of the Faculty of Medicine is to contribute to knowledge through Research in the University and its hospitals and the community.[1] Research conducted by the Faculty of Medicine is funded from a variety of sources and in varying amounts. The amounts and sources have varied over the years since the Medical School was established.

This thesis is a study of these amounts and sources. It should provide a partial insight into the present and past operation of the Faculty of Medicine. The study should also serve to establish a baseline for future research.

In addition, the methods used can perhaps be used as a framework for analysis by other Medical Schools (Faculties of Medicine).

Thus, this research is a case study of the factors potentially influencing the funding of Health Sciences Research in the Faculty of Medicine at Memorial University of Newfoundland.

Because the Faculty of Medicine, M.U.N. is the only Medical School in the province this study can serve as a reflection on the state of funding of Health Sciences Research in the province.

By analysing these factors and having a better understanding of their influences, the Medical School ought to be able to take steps

to increase its funding if it so desires.

1.2 BACKGROUND:

The Budget of the Provincial Department of Health of Newfoundland and Labrador in 1978-79 fiscal year was $226.5 million, of which $105,000.00 was specifically allocated for research.[2] This represents 0.04% of the total Health Department Budget.

The monies received by the Faculty of Medicine from external sources for research in the same fiscal year amounted to $1.56 million, or an amount approximately equal to 0.5% of the total Provincial Health Department Budget.[3]

"Research Priorities for Ontario", a Report of the Ontario Council of Health, 1977, recommended that the amount spent on non-industrial health research direct costs should be 2.67% of the province's health bill.[4]

Using this yardstick the Newfoundland Government should have spent approximately $6.0 million on health research direct costs, most of which might have been spent in the Faculty of Medicine at M.U.N. in that there is little research capacity elsewhere in the province.

In addition to the direct costs there are other costs such as physical plant operations, telephones, libraries, researchers salaries, etc., which are not always directly funded. These costs, usually called indirect costs, are difficult to ascertain accurately.

The rule of thumb is that they represent 50% of the amount of extra mural funded direct costs.[5]

Using the yardstick suggested for Ontario of 2.67% for direct and 1.33% for indirect costs (4% of the total health budget) the total non-industrial expenditure should be $9.06 million.[6]

The actual expenditure by the Faculty of Medicine for 1978-79 was estimated to be $2.34 million ($1.56 million actual direct and $780,000 estimated indirect based on the indirect being 50% of actual direct).

The figure of $1.56 million direct represents external research funding and assumes no direct funding for research from the operating grant of the school. This may not be strictly correct; however, it is the convention used since there is no identified research component in the operating grant given the school by the Provincial Government to finance its operations on a year-to-year basis.

Why then is the amount so low? What has been the trend and what factors have influenced this trend?

CHAPTER 2 - METHODOLOGY

2.1 RESEARCH DESIGN:

The research was organized along the following lines:

A. Ascertain the set of factors which might have an impact on funding.

B. Collect any data available relevant to these factors.

C. Analyse the data and the impact of the factors.

D. Present conclusions.

Selltez, et al. in "Research Methods in Social Relations" classifies this type of research as "Descriptive Studies".[1] This is not to suggest that this type of study is not scientific, but rather to indicate the difference between it and research which sets out to test a causal hypothesis.

Thus, this research design is characterized by the attempt to describe the health research effort of the Faculty of Medicine through quantitative and/or qualitative analysis of financial and non-financial factors, keeping in mind that the end purpose is the relevance to funding.

The research was carried out in the following manner:

a) Current literature was reviewed for relevant studies.

b) Discussions were held with researchers.

c) Discussions were held with administrative heads of the Faculty of Medicine as well as the University.

d) The financial records of the Faculty of Medicine and the

University were reviewed and any relevant information extracted for analysis.

e) Organizational structures of the Faculty of Medicine and the University were looked at.

f) Outside agencies were contacted for any information relevant to the case study.

g) The data was subject to quantitative and qualitative analysis.

h) The results were used to draw conclusions where possible.

2.2 INPUTS VS. OUTPUTS:

Research as an activity is reviewed by economists as having inputs and outputs. One can analyse the activity by analysing the inputs or outputs, or both.

The inputs to research include:

a) sources and amounts of funding

b) research personnel

c) location of activity

d) organizational structure

The outputs may be classified as:

a) training of personnel

b) improvement in health status

c) discoveries or innovations

For purposes of this thesis the factors chosen are those factors which are inputs to the system. This is because of the difficulty

of accurately measuring the outputs. The time dimensions in terms of outputs is also very long so by concentrating on the inputs the project is more easily handled.

2.3 PRIMARY DATA SOURCES:

The factors fall into two classes - financial and non-financial. The data is presented in a similar ordering.

2.3.1 Financial:

The Faculty of Medicine prepares each year for the Association of Canadian Medical Colleges a summary of financial statistics describing sources and amounts of research funds for the fiscal year April 1 to March 31. These statements were obtained for the years 1971-72 to 1979-80.[2]

The A.C.M.C. Forum was also a very useful source of data on the other fifteen Medical Schools in Canada.[3]

The Research Inventory, a list of funded research projects at M.U.N. for the years 1974-75 to 1978-79 were used to calculate certain statistics on grant awards.[4]

Copies of Grant statements were obtained from the Faculty of Medicine and the University and used to calculate expenditure patterns.[5]

Data were obtained from the reference list of Health Sciences Research in Canada published by the Medical Research Council and used for

comparisons of M.U.N. and other Medical Schools.[6]

A variety of Statistics Canada pub[illegible]ations were also used.

A variety of background data were gathered from the Ontario Council of Health and Science Council of Canada publications.

Other sources were used as necessary and are indicated where used.

2.3.2 Non-Financial:

The Directory of Research, a list of all funded and non-funded research at M.U.N., for the years 1977 and 1980 was used to document the numbers of researchers, areas of research, etc., for these years.[7]

Copies of faculty lists for years 1971 to 1980 were obtained from the office of the Dean of Medicine.

A computer search of the Science Citations Index was used to establish lists of publications.[8]

The office of Research, M.U.N., the Research and Development Committee of the Faculty of Medicine, the Student Affairs Officer, the office of the Assistant Dean for Post-Graduate Medical Education, the Graduate Studies Office provided a great deal of information which is specifically referred to in the body of the thesis.

CHAPTER 3 - INSTITUTIONAL FACTORS

3.1 INTRODUCTION:

This chapter deals with documenting the institutional factors which might influence the funding climate for Health Sciences Research. The institutional factors referred to are items such as:

a) organizational structure

b) institutional objectives

c) space

d) size of the faculty

Funding is dependent on the individual researcher and/or the institution putting forth a project it wishes to do, demonstrating that it is viable and satisfying the funding agency that the intended project can be executed.

3.2 ORGANIZATIONAL STRUCTURE:

3.2.1. Memorial University of Newfoundland (M.U.N.):

The government of M.U.N. is bicameral (see figure 3.1) with the Senate having primary responsibility for academic programs including research.[1] The Board of Regents has final ratification for programs approved by Senate. The administration of these programs is carried out by appointed officers. The Faculty of Medicine is represented on the Senate.

3.2.2 Senate:

The Senate has a committee on research. The terms of reference of this committee include involvement in:

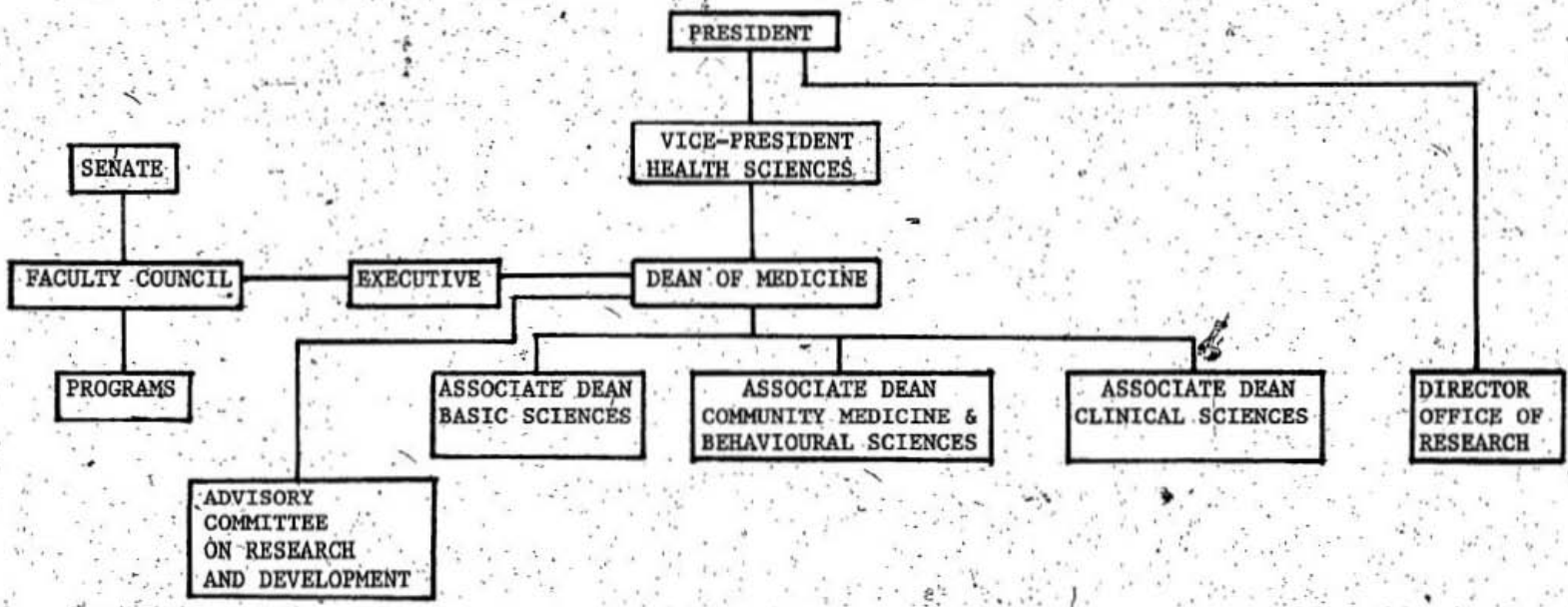

FIGURE 3.1: ORGANIZATIONAL STRUCTURE, M.U.N. FACULTY OF MEDICINE AND OFFICE OF RESEARCH

SOURCE: Compiled from discussions with various University officials.

a) University policy on research

b) University policy on contractual research

c) funding

The Senate Committee is aided by the Director of the Office of Research.[2]

3.2.3. Office of Research:

Prior to 1973, the Executive Assistant to the Vice-President Academic was responsible for:

a) disseminating of research information such as:

i) sources of funds

ii) research in progress

iii) procedures

b) processing applications for research funds

c) advising the Vice-President (Academic) on matters of research

d) assisting the Senate Committee on research[3]

In 1973 with the establishment of three Academic Vice-Presidents, an Office of Research was established with the Director of that office reporting to the President.[4] (See also figure 3.1, page 9).

The Director of the Office of Research was given the same responsibilities as held formerly by the Executive Assistant to the Vice-President Academic.[5]

3.2.4 Faculty of Medicine:

The Faculty of Medicine (see figure 3.1, page 9) is headed up by a Dean and three Associate Deans responsible for the three principle divisions namely:

a) Clinical Sciences

b) Basic Sciences

c) Community Medicine and Behavioural Sciences

The Dean and Associate Deans are actual members of national bodies including government advisory committees and granting councils.

3.2.5 Advisory Committee on Research and Development (A.C.R.D.):

The A.C.R.D. is an advisory committee to the Dean of Medicine. Its mandate is to advise the Dean on research matters including:

a) policy

b) funding

3.2.6 Research Groups:

There are research groups which have developed within the Faculty of Medicine which are inter- and intra-division oriented. A group is basically comprised of faculty who have an interest in a particular research project, problem, or area. Examples of such groups are:

a) Neurosciences

b) Molecular Biology

They provide for multidisciplinary effort in the specific area.

3.3 INSTITUTIONAL OBJECTIVES:

In a publication entitled The Medical School of Memorial University of Newfoundland, Sheila Gushue lists as one of the objectives of the Medical School "to contribute to knowledge through research in the University and its hospitals and the community.[6] This is one of the many ways in which this Medical School intends to involve itself in the needs of the Province".

Clearly research was an important activity in the thinking which led up to the establishment of the Faculty of Medicine.

Dr. A. R. Cox, Dean of Medicine, in talking about the Faculty of Medicine and its resources in 1977 at a conference on Northern Medicine and Health said that the research emphasis of the Faculty included:

a) Immunology - ranging from transplantation to extensive community studies
b) Genetics - biochemical, cyto, population and clinical
c) Neurosciences
d) Biochemistry - including mass spectrometry
e) Applied Physiology - temperature control, body calorimeter
f) Gastrointestinal Physiology
g) Clinical Pharmacology
h) Nephrology

In addition there are resources in

a) Community Nutrition

b) Health Care System Evaluation

c) Biostatistics

d) Epidemiology

These are all objectives and programs which are articulated by the Faculty of Medicine but represent also the University's policy on health research.

In terms of specific institutes, departments, etc., the Northern Medicine and Health group and the Telemedicine group are the only two research groups which have a specific and identifiable name.

There have been a number of research projects which have been specifically community oriented. These include:

a) Hypertension

b) Home Care Program

c) Community Health Centre

d) Family Practice Nurse Program

The Northern Medicine and Health group are involved in a study of Pneumoconiosis in the towns and mines of Wabush and Labrador City.

3.4 SPACE:

The Faculty of Medicine began life with the appointment of the first faculty in 1967. A number had offices in the temporary buildings on the University campus while others had offices at the City Hospitals.

The final decision on a permanent home for the Faculty of Medicine was made in 1970 with the agreement to build a Health Sciences Centre (H.S.C.) on the campus of M.U.N. to include the Faculty of Medicine as well as The General Hospital. This provided access to needed beds as well as forging a close interrelationship between the two institutions.

Construction started in June of 1971. Up to this time, the amount of laboratory space available for research in the Faculty of Medicine amounted to only 15,000 gross square feet. With an occupancy ratio of 1,500 gross square feet (1,000 net square feet) per individual researcher including support staff, graduate students, etc., this would suggest supporting only ten researchers.

The first space in the H.S.C. became available in December, 1973. This was the Teaching Laboratory area. This made possible a slight expansion of research space in the temporary buildings - in the area vacated by the Teaching Laboratories.

As more space became available in the H.S.C., people moved from the temporary buildings. In addition, new faculty were hired and they established their research labs. By early 1977 the Faculty of Medicine had completely vacated the temporary buildings.

There is approximately 48,000 gross square feet of laboratory and office space available and used for research in the H.S.C. In addition, certain faculty who have a limited research operation are

able to perform this function in their faculty office. Approximately 2,000 gross square feet is remaining for new research projects or expansion of existing projects.

With regard to the affiliated hospitals there is no space, with minor exceptions, available for research.

3.5 SIZE OF THE FACULTY OF MEDICINE:

3.5.1 Faculty Members:

There were 127 full-time faculty in the 1979-80 academic year with 37 in Basic Sciences, 11 in Community Medicine and 79 in Clinical Sciences. We see from Table 3.1 that there has been an almost steady increase fron 69 in 1972-73. We see also that of the 69 present in 1972-73, 31 or approximately 45% were still on faculty in 1979-80.

In comparison with other medical schools we see from Tables 3.2 and 3.3 that Memorial ranked 16 of 16 in 1973-74 and maintained that rank in 1977-78.

3.5.2 Students:

There were 430 students including undergraduate, graduate and interns and residents in the 1979-80 academic year. We see from Table 3.4 that there was an increase in numbers from 1972-73 to 1978-79 with no increase in the total for 1979-80.

TABLE 3.1

NUMBER OF FACULTY BY DIVISION FOR YEARS 1972 to 1979-80 AND

NUMBER OF FACULTY PRESENT IN EACH YEAR AND PRESENT IN YEAR 1979-80.

YEAR	BASIC SCIENCES		COMMUNITY MED.		CLINICAL		TOTALS	
	Present In Yr.	Present 1979-80	Present In Yrs.	Present 1979-80	Present In Yr.	Present 1979-80	Present In Yr.	Present 1979-80
1972-73	24	10	9	2	36	19	69	31
1973-74	26	11	10	2	46	26	82	39
1974-75	27	17	9	3	60	32	96	52
1975-76	22	17	6	3	57	35	85	55
1976-77	31	25	10	7	65	45	106	77
1977-78	31	26	11	9	64	49	106	84
1978-79	34	34	11	10	68	56	113	100
1979-80	37	37	11	11	79	79	127	127

SOURCE: Calculated from records in Office of Dean of Medicine

TABLE 3.2

MEDICAL SCHOOL FACULTY MEMBERS - 1974

INSTITUTION	(RANK) # FULL TIME	(RANK) # PART TIME	(RANK) VOLUNTEERS	(RANK) TOTAL
University of Toronto	622 (1)	1258	0	1880 (1)
McGill University	334 (2)	420	379	1133 (2)
McMaster University	272 (3)	11	187	470 (10)
University of Western Ontario	253 (4)	276	54	583 (7)
University of Montreal	234 (5)	545	118	879 (3)
University of British Columbia	233 (6)	68	515	816 (5)
University of Manitoba	203 (7)	211	163	577 (8)
University of Laval	184 (8)	45	609	838 (4)
Dalhousie University	181 (9)	326	0	507 (9)
Queen's University	178 (10)	85	16	279 (14)
University of Ottawa	172 (11)	54	218	444 (11)
University of Sherbrooke	162 (12)	86	0	248 (15)
University of Alberta	153 (13)	422	39	605 (6)
University of Saskatchewan	137 (14)	109	63	309 (12)
University of Cangary	92 (15)	10	201	303 (13)
Memorial University	72 (16)	16	69	157 (16)

NOTE: The term volunteers should be interpreted with caution. No clear cut definition of the term exists as well as no clear distinction with part-time.

SOURCE: A.C.M.C. Forum, Vol. VII, #5, September-October, 1974, Table 10, p.15.

TABLE 3.3

MEDICAL SCHOOL FACULTY MEMBERS - 1977-78

INSTITUTION	(RANK) # FULL-TIME	(RANK) # PART-TIME	(RANK) VOLUNTEERS	(RANK) TOTAL
University of Toronto	785 (1)	516	1064	2365 (1)
McGill University	469 (2)	140	630	1239 (2)
University of Montreal	312.5 (3)	612	178	1102.5 (3)
University of Western Ontario	302 (4)	128	236	666 (8)
University of British Columbia	272 (5)	95	708	1075 (4)
University of Manitoba	268 (6)	155	255	678 (7)
McMaster University	246 (7)	5	294	545 (10)
Queen's University	219 (8)	17	131	367 (13)
Dalhousie University	217 (9)	402	0	619 (9)
University of Laval	193 (10)	597	0	790 (5)
University of Saskatchewan	180.5 (11)	137	0	317.5 (15)
University of Alberta	169 (12)	429	106	704 (6)
University of Ottawa	168 (13)	56	293	517 (11)
University of Sherbrooke	150 (14)	182	0	332 (14)
University of Calgary	120 (15)	18	268	406 (12)
Memorial University	109 (16)	2	5	116 (16)
Memorial University[a]	109 (16)[a]	- 148[a] -		257 (16)[a]

SOURCE: Association of Canadian Medical Colleges Canadian Medical Education Statistics, 1977-78 and 1978-79, Table 62.

a: Corrected Statistics (A.C.M.C. Statistics are incorrect for M.U.N.)

TABLE 3.4

STUDENT ENROLMENT, M.U.N. FACULTY OF MEDICINE

1972-73 to 1979-80

YEAR	UNDERGRADUATE	GRADUATE	RESIDENTS/INTERNS	TOTALS
1972-73	169	0	68	237
1973-74	211	17	95	323
1974-75	222	23	136	381
1975-76	225	24	121	370
1976-77	228	24	149	401
1977-78	225	24	162	411
1978-79	228	36	166	430
1979-80	226	38	166	430

SOURCE: Memorial University of Newfoundland Faculty of Medicine:
a) Undergraduate - Students Affairs Office
b) Graduate - Graduate Studies Office
c) Residents/Interns - Postgraduate Medical Studies Office

In comparison with other Medical Schools we see in Tables 3.5 and 3.6 that Memorial has ranked 15th of 16 for the years 1975-76 to 1979-80. In 1979-80 Memorial's share was 3.1% of the total undergraduate enrolment in Medical Schools in Canada. It should be noted that there is a small discrepancy in numbers of medical student enrolment statistics between Tables 3.4 and 3.5. This is due to the difference in reporting dates within each year.

3.5.3. Faculty-Student Ratios:

Radios of Faculty to students using

a) all students

b) undergraduate and graduate

were calculated for the years 1972-73 to 1979-80 for the Faculty of Medicine, M.U.N. These are presented in Table 3.7. We see that there has been a steady improvement in the ratio since 1973-74. That is the numbers of faculty have increased relative to the numbers of students. This would suggest a lessening of the overall teaching load and more time being available for research or other activities. Table 3.8 shows a comparison of student-faculty ratio for all sixteen schools for the year 1977-78.

TABLE 3.5

MEDICAL STUDENT ENROLMENT BY INSTITUTION

1975-76 to 1979-80

SCHOOL	75-76	76-77	77-78	78-79	79-80
1. Montreal	976	977	970	964	1013
2. Toronto	985	1004	1013	1013	1002
3. McGill	626	629	636	632	634
4. Laval	692	645[1]	641	640	618
5. Alberta	464	467	466	465	462
6. Western Ontario	405	414	416	415	412
7. Sherbrooke	349	368	394	401	404
8. Dalhousie	377	378	377	378	385
9. Manitoba	400	396	385	384	384
10. British Columbia	328	325	320	328	357
11. Ottawa	331	330	332	326	326
12. Saskatchewan	316	316	313	310	302
13. McMaster	262	282	304	301	303
14. Queen's	294	305	301	305	304
15. M.U.N.	222	229	229	230	226
16. Calgary	191	225	212	217	215

[1]Projections

Source:
1. 75-76: A.C.M.C. Forum, Vol. IX, #1, Table 1, p.22.
2. 76-77: A.C.M.C. Forum, Vo. IX, #5, October-November 1976, Table 1, p.35.
3. 77-78: A.C.M.C. Forum, Vol. XII, #1, December 1978-January 1979, Table 1, p.5.
4. 78-79: A.C.M.C. Forum, Vol. XII, #1, December 1978-January 1979, Table 1, p.5.
5. 79-80: A.C.M.C. Forum, Vol. XIII, #2, Tables 6 and 13, pp.8, 16.

TABLE 3.6

RANKING OF MEDICAL SCHOOL BY SHARE

OF MEDICAL STUDENT ENROLMENT

1979-80

RANK	MEDICAL SCHOOL	# OF STUDENTS	% OF TOTAL
1	University of Montreal	1013	13.8
2	University of Toronto	1002	13.6
3	McGill University	634	8.6
4	University of Laval	618	8.4
5	University of Alberta	462	6.3
6	University of Western Ontario	412	5.6
7	University of Sherbrooke	404	5.5
8	Dalhousie University	385	5.2
9	University of Manitoba	384	5.2
10	University of British Columbia	357	4.9
11	University of Ottawa	326	4.4
12	University of Saskatchewan	302	4.1
13	McMaster University	303	4.1
14	Queen's University	304	4.1
15	Memorial University	226	3.1
16	University of Calgary	215	2.9
		7347	100 %

SOURCE: A.C.M.C. Forum, Vol. XIII, #2, February-March 1980, Table 6, p.8 and Table 13, p.16.

TABLE 3.7

FACULTY/STUDENT RATIOS

FACULTY OF MEDICINE

FOR YEARS 1972-73 to 1979-80

YEAR	STUDENT ENROLMENT		FULL-TIME FACULTY	FACULTY/STUDENT RATIO	
	All Students	Undergraduate and graduate		1 ALL	2 UNDERGRADUATE and GRADUATE
1972-73	237		69	1:3.4	
1973-74	323	228	82	1:3.9	1:2.8
1974-75	381	245	96	1:4.0	1:2.6
1975-76	370	249	85	1:4.4	1:2.9
1976-77	401	252	106	1:3.8	1:2.4
1977-78	411	249	106	1:3.9	1:2.3
1978-79	430	264	113	1:3.8	1:2.3
1979-80	430	264	127	1:3.4	1:2.1

SOURCE: Calculated from Tables 3.1 and 3.4

TABLE 3.8

TOTAL STUDENTS AND FACULTY FOR YEAR 1977-78 AND RATIO OF STUDENTS T

SCHOOL	STUDENTS				FACULTY		FACU
	Medical	Graduate	Post-Graduate	Total	Full-Time Faculty	Part-Time Faculty	To Fa
Memorial[a]	230	39	93	362	109	7	1
Dalhousie	378	45	218	641	217	402	7
Laval	640	84	210	934	193	597	7
Sherbrooke	401	66	90	557	150	182	3
Montreal	964	358	481	1803	311.5	790	11
McGill	632	308	554	1494	469	770	12
Ottawa	326	42	271	639	168	349	5
Queen's	305	41	182	528	219	148	3
Toronto	1013	343	1035	2391	785	1580	23
McMaster	301	163	276	740	246	299	5
Western	415	181	286	882	302	364	6
Manitoba	384	106	217	707	268	410	6
Saskatchewan	310	37	116	463	180.5	137	3
Alberta	465	59	219	743	169	535	7
Calgary	217	40	203	460	120	286	4
British Columbia	328	75	262	665	270	803	10

SOURCE: Association of Canadian Medical Colleges Canadian Medical Education Statistics. 1977-78 Table 16, p.16, and Table 62, p.55.

a. NOTE: Statistics for Memorial are inaccurate. The corrected values are:

	225	24	162	411	109	141	2

TABLE 3.8

ENTS AND FACULTY FOR YEAR 1977-78 AND RATIO OF STUDENTS TO FACULTY

STUDENTS			FACULTY			
raduate	Post-Graduate	Total	Full-Time Faculty	Part-Time Faculty	Total Faculty	Student/Faeulty Ratio
39	93	362	109	7	116	03.12
45	218	641	217	402	790	1.04
84	210	934	193	597	790	1.18
66	90	557	150	182	332	1.68
358	481	1803	311.5	790	1101.5	1.64
308	554	1494	469	770	1239	1.21
42	271	639	168	349	517	1.24
41	182	528	219	148	367	1.44
343	1035	2391	785	1580	2365	1.01
163	276	740	246	299	545	1.36
181	286	882	302	364	666	1.32
106	217	707	268	410	678	1.04
37	116	463	180.5	137	317.5	1.46
59	219	743	169	535	705	1.06
40	203	460	120	286	406	1.13
75	262	665	270	803	1073	0.62

Colleges Canadian Medical Education Statistics, 1977-78 and 1978-79, Ottawa 1979,
.55.

naccurate. The corrected values are:

24	162	411	109	141	250	1.64

CHAPTER 4 — FINANCIAL FACTORS

4.1 INTRODUCTION:

In order to look critically at the funding of Health Sciences Research in the Faculty of Medicine, M.U.N., one needs to be aware of the relative size of the funding in Universities in general and the country as a whole. This thesis being a case study of a Faculty of Medicine is a specific analysis of only a small segment of the total health research industry.

This chapter deals with data collected from a variety of sources. Therefore the possibility exists that inconsistencies are present. The data bases used were published materials in the case of statistics for other Medical Schools and the country as a whole, while for M.U.N. the sources included published and unpublished material.

Information is presented on the sources and amounts of funds as well as how these funds are spent. The term expenditure will be used interchangeably with funding since in most cases the expenditures represent funding for the years in question. This is not strictly correct as viewed from the position of an accountant. However, it is the convention adopted by most people with whom I have had occasion to talk, or whose work I have read.

4.2 THE SIZE OF THE HEALTH RESEARCH INDUSTRY:

The exact size of the Health Research industry in Canada is difficult to establish. Because of the complexity, the lack of

uniformity in statistical records, etc., one must accept the possibility of inaccuracies in gross statistics. However, the Science Council of Canada estimated that the direct expenditures for support of Health Sciences Research and Development in Canada in 1971-72 were in the order of $108.6 million.[1]

R. D. Frazer in Report of Committee on Health Research estimated the size of the health research sector in Canada in 1971-72 at $119.6 million, including direct and indirect support.[2]

In 1978-79, health research expenditures amounted to $228.8 million for direct and indirect support. This amounts to some .12% of the gross national product for 1978, or some 14.7% of the total civilian Research and Development expenditure in Canada.[3]

The Medical Research Council (M.R.C.) has attempted to prepare statistics on Health Research expenditures. In correspondence with Dr. R. Simard, the President of M.R.C., he indicated that M.R.C. puts the expenditures at $228.8 for 1978-79.[4] Table 4.1 shows the composition of this support for research for 1978-79. What is obvious is the large part played by the Universities in carrying out Health Research ($74.8 million + $70.4 million + share of Provincial Government, voluntary agencies, and foreign sources {$23.0 million + $35.0 million + $8.0 million}). The role of the Federal Government is also significant. It supplied $121.4 million plus a share of the Provincial Government budget, through fiscal transfers and grants to the provinces.

TABLE 4.1

HEALTH RESEARCH EXPENDITURES IN CANADA, 1978-79

SOURCE	$ MILLIONS	PERCENT OF TOTAL
FEDERAL GOVERNMENT	121.4	42.0
of which Universities received an estimated	(74.8)	(25.9)
PROVINCIAL GOVERNMENTS	23.0	8.0
VOLUNTARY AGENCIES	35.0	12.1
INDUSTRY (PHARMACEUTICAL)	31.0	10.7
FOREIGN SOURCES	8.0	2.8
UNIVERSITIES (EST.)	70.4	24.4
	288.8	100.0

SOURCE: Personal Correspondence with Dr. R. S. Simard, President of the Medical Research Council of Canada.

Table 4.2 shows relative roles of the Federal Government on the one hand and the Voluntary Health Agencies on the other hand in support of Health Sciences Research in Canada for the ten year period 1968-69 to 1978-79. We see that the support has slipped from 74% to 56% for the Federal Government, while the support by the Voluntary Health Agencies and the Provincial Government has gone from 25% to 40%. The percentage differs between Tables 4.1 and 4.2 because Table 4.1 includes indirect costs of research (70.4 million). Otherwise the percentages would be the same. However, the important thing to note are the trends in the data in Table 4.2. Statistics Canada estimated that Canadian Universities received $243.0 million for Research and Development in 1979-80.[5]

Table 4.3 shows the amount of funds by source for health research and development in Universities in Canada for the year 1979-80. When compared with Table 4.1, we see that Universities are the major performers of Health Sciences Research and Development (243.0 million of $288.8 million or 84.14%). This is a fair comparison in that both tables are calculated by Federal Agencies from the same data bases and using the same methodologies. Tables 4.4 and 4.5 show the growth in University Health Sciences Research and Development for the years 1968-69 to 1979-80. Using Statistics Canada, Table 4.5 shows a shift in source of funds, especially in the case of the Federal, Provincial Governments and the Universities.

TABLE 4.2

PERCENTABE OF FUNDS FOR EXTRAMURAL HEALTH SCIENCE RESEARCH IN CANADA BY MAJOR SOURCE (1968-79)

SOURCE	68-69	70-71	72-73	74-75	76-77	78-79
M.R.C.	58	58	55	50	49	47
OTHER FEDERAL	16	14	17	17	10	9
TOTAL FEDERAL	74	72	72	67	59	56
OTHER CANADIAN AGENCIES*	25	27	26	30	35	40
U.S. NATIONAL INSTITUTES OF HEALTH	1	1	2	3	6	4
	100	100	100	100	100	100

* INCLUDES PROVINCIAL GOVERNMENTS AND VOLUNTARY HEALTH AGENCIES.

SOURCE: Layne, Dr. D. S.: "Funding: Requirements, Sources, Priorities, Limitations, and Correlation". Report of Conference on "Biomedical Research in Canada", Canadian Medical Association, Ottawa, 1979, p.133.

TABLE 4.3

SOURCE OF FUNDS FOR HEALTH SCIENCES RESEARCH AND DEVELOPMENT PERFORMED IN CANADIAN UNIVERSITIES 1979-80

SOURCE	AMOUNT MILLIONS OF DOLLARS	PERCENT OF TOTAL
Federal Government	68.6	28.2
Provincial Government	19.2	7.9
Business	0.7	0.3
Universities	115.2	47.4
Private Non-Profit	33.1	13.6
Foreign	6.2	2.6
TOTAL	243.0	100 %

SOURCE: Annual Review of Science Statistics, 1979, Statistics Canada Catalogue 13-212, Annual Text Table IX, p.29.

TABLE 4.4

SOURCES OF FUNDS FOR UNIVERSITY RESEARCH AND DEVELOPMENT
IN HEALTH SCIENCES, 1967-68 to 1979-80
IN MILLIONS OF DOLLARS

YEAR	FEDERAL	PROVINCIAL	BUSINESS	UNIVERSITY (1)	PRIVATE Non-Profit	FOREIGN	TOTAL
1967-68	28.0	13.6	0.2	14.6	6.5	1.3	64.2
1968-69	38.3	17.1	0.2	10.6	8.1	1.1	75.4
1969-70	38.8	15.9	0.2	22.8	8.0	0.8	86.5
1970-71	39.6	14.5	0.3	36.0	9.4	0.6	100.4
1971-72	43.1	10.7	0.4	40.2	14.6	0.7	109.7
1972-73	46.1	14.6	0.5	30.5	15.1	1.4	108.2
1973-74	49.9	16.5	0.4	32.0	15.6	1.4	115.8
1974-75	48.8	13.8	0.6	49.9	20.6	2.1	135.8
1975-76	48.8	12.1	0.6	76.3	20.0	3.8	161.6
1976-77	53.4	14.9	0.7	84.7	25.0	2.0	180.7
1977-78	63.0	15.3	0.7	93.6	27.5	5.8	205.9
1978-79	68.1	17.5	0.7	102.4	30.1	6.2	225.0
1979-80	68.6	19.2	0.7	115.2	33.1	6.2	243.0

(1) INCLUDES OVERHEAD COSTS.

SOURCE: Annual Review of Science Statistics, 1979, Statistics Canada, Catalogue 13-212, Annual Table 28, p.52.

TABLE 4.5

PERCENTAGE OF TOTAL FUNDING BY SOURCE FOR UNIVERSITY RESEARCH AND DEVELOPMENT IN HEALTH SCIENCES 1968-69 to 1979-80

YEAR	FEDERAL	PROVINCIAL	BUSINESS	UNIVERSITY	PRIVATE Non-Profit	FOREIGN
1968-69	50.8	22.7	0.3	14.1	10.7	1.5
1969-70	44.9	18.4	0.2	26.4	9.2	0.7
1970-71	39.4	14.4	0.3	35.9	9.4	0.6
1971-72	39.3	9.8	0.4	36.6	13.3	0.6
1972-73	42.6	13.5	0.5	28.2	14.0	1.3
1973-74	43.1	14.2	0.3	27.6	13.5	1.2
1974-75	35.9	10.2	0.4	36.7	15.2	1.5
1975-76	30.2	7.5	0.4	47.2	12.4	2.4
1976-77	29.6	8.2	0.4	46.9	13.8	1.1
1977-78	30.6	7.4	0.3	45.5	13.4	2.8
1978-79	30.3	7.8	0.3	45.5	13.4	2.8
1979-80	28.2	7.9	0.3	47.4	13.6	2.6

SOURCE: Calculated from Annual Review of Science Statistics, 1979, Statistics Canada Catalogue 13-212, Annual Table 28, p.52.

4.3 EXPENDITURES FOR BIOMEDICAL RESEARCH IN MEDICAL SCHOOLS:

While not all Health Sciences Research is carried out in the sixteen Medical Schools, the expenditure figures which follow clearly indicate that a major portion of it is.

According to figures prepared by the Association of Canadian Medical Colleges, approximately $125.2 million was spent on biomedical research by the sixteen medical schools in 1978-79.[6] This represents direct extramural support and excludes the indirect expenditures. This is in line with the figures presented in Table 4.4, ie: $225.0 million (total Table 4.4) - $102.4 million (University) + $2.7 million (University Table 4.6) = $125.3 million.

Table 4.6 shows the breakdown of the expenditures for 1978-79 as well as 1977-78. The Federal Government is seen as the major contributor.

If one ranks the sixteen schools by expenditures as in Table 4.7, we see that Memorial ranks sixteenth of sixteen with 1.2% and 1.3% of the total for the years 1977-78 and 1978-79 respectively. We see also that the three largest schools represented 43% and 45% of the total expenditures for 1977-78 and 1978-79 respectively.

4.4 OPERATING BUDGET:

The operating budget of the Faculty of Medicine consists primarily of a grant awarded to the University from the Department of Health

TABLE 4.6

EXPENDITURES FOR BIOMEDICAL RESEARCH OF CANADIAN FACULTIES OF MEDICINE
BY SOURCE OF FUNDS, 1977-78 and 1978-79
(THOUSANDS OF CANADIAN DOLLARS)

SOURCE	1977-78		1978-79	
	AMOUNT	% OF TOTAL	AMOUNT	% OF TOTAL
MEDICAL RESEARCH COUNCIL	$47,133	44.0	$53,742	42.9
NATIONAL HEALTH AND WELFARE	7,306	6.8	7,459	6.0
NATIONAL RESEARCH COUNCIL	765	0.7	937	0.7
OTHER FEDERAL AGENCIES AND DEPARTMENTS	716	0.7	639	0.5
NATIONAL CANCER INSTITUTE	7,298	6.8	7,977	6.4
HEART FOUNDATION	6,976	6.4	7,710	6.2
OTHER NATIONAL FOUNDATIONS AND ASSOCIATIONS	7,576	7.1	10,930	8.7
NATIONAL COMPANIES (PRIVATE INDUSTRY)	1,972	1.8	2,085	1.7
PROVINCIAL GOVERNMENTS	10,371	9.7	12,067	9.6
OTHER PROVINCIAL SOURCES	3,998	3.7	3,433	2.7
LOCAL SOURCES	3,508	3.3	5,654	4.5
INTERNAL UNIVERSITY SOURCES	2,523	2.4	2,659	2.1
U.S.A. SOURCES	5,743	5.3	6,641	5.3
OTHER FOREIGN SOURCES	127	0.1	796	0.6
MISCELLANEOUS	1,336	1.2	2,426	1.9
TOTAL	$107,233	100.0	$125,156	100.0

SOURCE: A.C.M.C. Forum, Vol. XII, #5, August-September 1979, Table 2, p.22.

NOTE: EXCLUDES INDIRECT EXPENDITURES

TABLE 4.7

EXPENDITURES FOR BIOMEDICAL RESEARCH BY CANADIAN FACULTIES OF MEDICINE, 1977-78 AND 1978-79 (THOUSANDS OF CANADIAN DOLLARS)

	1977-78		1978-79	
RANK	AMOUNT	% OF TOTAL	AMOUNT	% OF TOTAL
1	19,989	18.6	22,996	18.4
2	16,017	14.9	17,700	14.1
3	10,746	10.0	15,894	12.7
4	8,329	7.8	9,666	7.7
5	8,325	7.8	9,512	7.6
6	7,129	6.4	8,242	6.6
7	6,322	5.9	7,681	6.1
8	5,162	4.8	5,094	4.1
9	4,313	4.0	4,713	3.8
10	4,234	3.9	4,523	3.6
11	3,769	3.5	4,226	3.4
12	3,545	3.3	4,046	3.2
13	3,063	2.9	3,867	3.1
14	2,874	2.7	2,738	2.2
15	2,295	2.1	2,633	2.1
16	1,236	1.2	1,625	1.3
TOTAL	$107,348	100.0	$125,156	100.0

SOURCE: A.C.M.C. Forum, Vol. XII, #5, August-September 1979, Table 1, p.21.

of the province.

It is awarded on an annual basis following a review of its proposals for that particular year. It is based on the specific programs approved by the University in consultation with the necessary authorities.

In Table 4.8 we see that the operating budget for the year 1971-72 was $2,027,000.00. In 1979-80 this budget had increased to $7,990,343.00. The increase in the budget was based on a number of factors including:

a) increase in enrolment

b) increase in faculty

c) implementation of new programs

d) inflation

e) increased cost of operations such as the move to the H.S.C.

There is no specific allocation in the operating budget for research. However, since the cost of faculty salaries, physical operations, etc. are included there is a certain amount of support for researcy. Using the convention adopted by the Medical Research Council, the Association of Canadian Medical Colleges, and others, of 50% of direct extramural support the amount of indirect (or overhead) support would be $868,346.00. Table 4.9 shows what this would be for the years 1971-72 to 1979-80 if we follow this convention. This support is critical in that only one faculty member's salary was supported from external funds in 1980.[7]

TABLE 4.8

OPERATING BUDGET
FACULTY OF MEDICINE
FOR YEARS 1971-72 to 1979-80

YEAR	AMOUNT
1971-72	$2,027,000
1972-73	$2,479,148
1973-74	$3,002,500
1974-75	$3,898,000
1975-76	$4,846,976
1976-77	$6,091,886
1977-78	$6,869,290
1978-79	$7,376,613
1979-80	$7,900,343

SOURCE: Memorial University of Newfoundland
Faculty of Medicine Finance Office

TABLE 4.9

DIRECT AND INDIRECT EXPENDITURES ON RESEARCH
FOR YEARS 1971-72 TO 1979-80

YEAR	DIRECT	INDIRECT	TOTAL
1971-72	$ 520,685	$260,343	$ 780,928
1972-73	$ 616,305	$308,153	$ 924,458
1973-74	$ 779,214	$389,607	$1,168,821
1974-75	$ 806,307	$403,154	$1,209,461
1975-76	$ 924,164	$462,082	$1,386,246
1976-77	$ 858,369	$429,185	$1,287,554
1977-78	$1,125,364	$562,682	$1,688,046
1978-79	$1,511,075	$755,538	$2,266,613
1979-80	$1,736,691	$868,346	$2,605,037

SOURCE: DIRECT EXPENDITURES - Memorial University of Newfoundland
Faculty of Medicine Finance Office

INDIRECT EXPENDITURES - Calculated as 50% of direct
expenditures.

4.5 EXTERNAL GRANT AMOUNTS:

The Faculty of Medicine, like the other fifteen Medical Schools, is dependent on a large number of agencies for research monies. Table 4.10 shows the amount of expenditures on research from external grants for the years 1971-72 to 1979-80. The Medical Research Council and National Health and Welfare are major sources of these funds as are the Voluntary Health agencies such as National Cancer, Heart Foundation and others..

Fig. 4.1 shows that these external grants were equal to approximately 25% of the operating budget of the faculty in the early 1970's. The low period of the mid- and late 70's might be due to the influence of the Health Resources Fund.

In comparison with other Medical Schools, Table 4.11 shows many similarities in terms of relative importance of funding sources. The notable differences are National Health and Welfare, Provincial Governments, and National societies. Memorial does not enjoy the specific fundings from the Newfoundland Government that other Medical Schools receive from their Provincial Government.

Table 4.12 is a further presentation of this same data by major source.

4.6 HEALTH RESOURCES FUND:

The Health Resources Fund was established in 1966 by the Federal Government to assist with the construction of health training

TABLE 4.10

FACULTY OF MEDICINE EXPENDITURES FROM EXTERNAL RESEARCH GRANTS FOR YEARS

	INSTITUTION	1971-72	1972-73	1973-74	1974-75	1975-76	107
A.	Medical Research Council	331,780.	278,630.	336,334.	273,158.	421,277.	341
B.	National Research Council	1,766.	17,400.	10,000.	0.	5,705.	
C.	Department of National Health and Welfare	92,370.	148,035.	204,266.	315,988.	261,151.	307
D.	National Cancer Institute	29,925.	28,512.	21,438.	11,295.	20,669.	30
E.	Heart Foundation	20,409.	27,756.	27,820.	81,292.	54,913.	13
F.	Other National Foundations, Societies and Associations	0.	0.	0.	0.	93,419.	79
G.	Other Federal Government Agencies and Departments	0.	0.	0.	0.	0.	10
H.	National Companies	44,435.	67,227.	87,320.	28,542.	0.	14
I.	Provincial Government Departments	0.	0.	0.	0.	0.	
J.	Other Provincial Sources	0.	0.	0.	0.	0.	
K.	Local Sources	0.	0.	0.	0.	0.	
L.	Internal University Sources	0.	0.	0.	0.	0.	27
M.	U.S.A. Sources	0.	48,745.	92,054.	96,032.	67,030.	32
	TOTAL	520,685.	616,305.	779,214.	806,307.	924,164.	858
	NO. OF GRANTS IN USE	24	41	49	43	57	
	AVERAGE GRANT EXPENDITURE	18,595.	15,031.	15,902.	18,751.	16,213.	13

SOURCE: Memorial University of Newfoundland, Faculty of Medicine.

A.C.M.C. Biomedical Research Expenditure Questionnaire for Years 1971-72 to 1979-80.

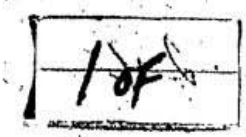

TABLE 4.10

EXPENDITURES FROM EXTERNAL RESEARCH GRANTS FOR YEARS 1971-72 TO 1979-80

1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
278,630.	336,334.	273,158.	421,277.	341,561.	470,475.	604,630.	750,818.
17,400.	10,000.	0.	5,705.	0.	10,840.	0.	0.
148,035.	204,266.	315,988.	261,151.	307,737.	196,669.	269,336.	300,131.
28,512.	21,438.	11,295.	20,669.	30,129.	39,421.	68,066.	180,072.
27,756.	27,820.	81,292.	54,913.	13,992.	64,544.	89,280.	71,650.
0.	0.	0.	93,419.	79,625.	166,061.	196,324.	89,110.
0.	0.	0.	0.	10,000.	4,975.	0.	0.
67,227.	87,320.	28,542.	0.	14,329.	35,250.	102,368.	187,472.
0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	38,967.	68,311.	73,847.
0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	27,068.	54,832.	50,651.	24,007.
48,745.	92,054.	96,032.	67,030.	32,428.	43,330.	47,109.	59,584.
616,305.	779,214.	806,307.	924,164.	858,369.	1,125,364.	1,511,075.	1,736,691.
41	49	43	57	58	73	81	82
15,031.	15,902.	18,751.	16,213.	13,844.	15,567.	18,655.	21,179.

and, Faculty of Medicine.

_ for Years 1971-72 to 1979-80.

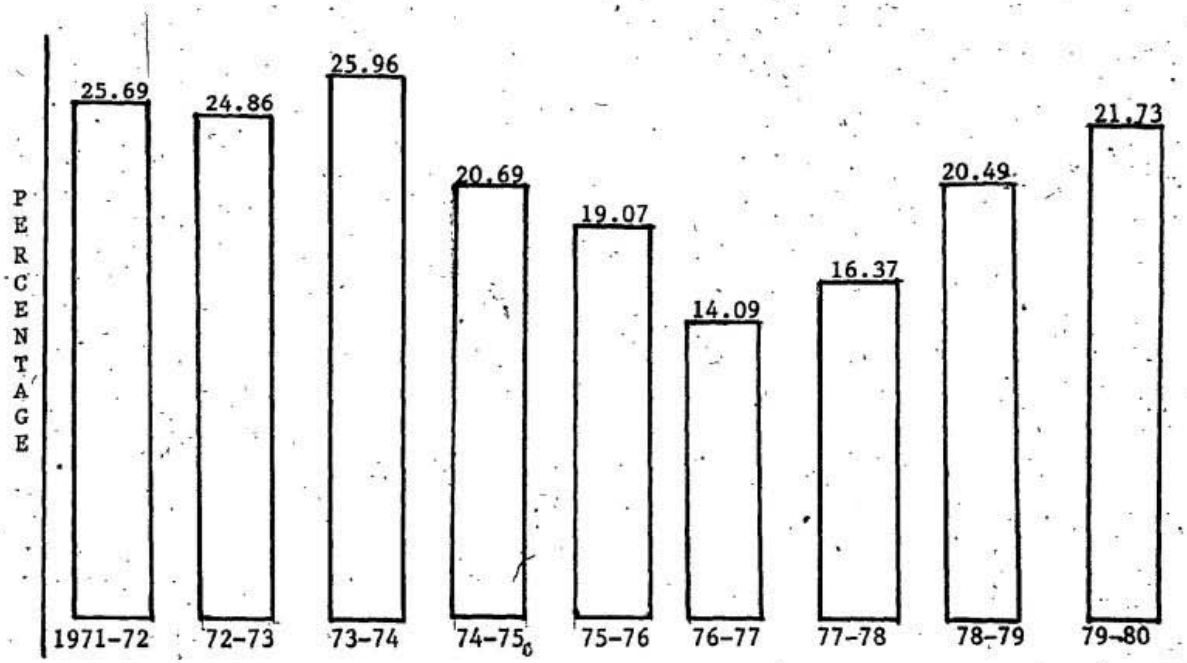

FIGURE 4.1: EXTERNAL GRANTS (EXCLUDING H.R.F.) AS A PERCENTAGE OF OPERATING BUDGET FOR YEARS 1971-72 TO 1979-80

SOURCE: Calculated from Tables 4.8 and 4.10

TABLE 4.11

EXPENDITURES FOR BIOMEDICAL RESEARCH
BY CANADIAN FACULTIES OF MEDICINE BY
SOURCE OF FUNDS, 1977-78 AND 1978-79 AND M.U.N. COMPARED

SOURCE	1977-78		1978-79	
	ALL % OF TOTAL	M.U.N. % OF TOTAL	ALL % OF TOTAL	M.U.N. % OF TOTAL
Medical Research Council	44.0	41.6	42.9	40.0
National Health & Welfare	6.8	17.5	6.0	17.8
National Research Council	0.7	1.0	0.7	0.0
Other Federal	0.7	0.4	0.5	0.0
National Cancer	6.8	3.5	6.4	4.5
Heart Foundation	6.4	5.8	6.2	5.9
Other National Foundations, Societies, and Associations	7.1	14.8	8.7	13.0
National Companies	1.8	3.1	1.7	6.8
Provincial Governments	9.7	0.0	9.6	0.0
Other Provincial	3.7	3.5	2.7	4.5
Local Sources	3.3	0.0	4.5	0.0
Internal University	2.4	4.9	2.1	3.4
U.S.A. Sources	5.3	3.9	5.3	3.1
Other Foreign	0.1	0.0	0.6	1.0
Miscellaneous	1.2	0.0	1.9	0.0
TOTAL	100.0	100.0	100.0	100.0

SOURCE: 1. All Canadian Faculties of Medicine - A.C.M.C. Forum, Vol. XI, #5, August-September 1979, Table 2, p.22.

2. Memorial University of Newfoundland, Faculty of Medicine Finance Office.

TABLE 4.12

EXPENDITURES FOR BIOMEDICAL RESEARCH BY CANADIAN FACULTIES OF MEDICINE BY MAJOR SOURCE OF FUNDS 1977-78 AND 1978-79 AND M.U.N. COMPARED (EXPRESSED AS A PERCENT OF TOTAL)

	1977-78		1978-79	
	ALL	M.U.N.	ALL	M.U.N.
Federal Government	52.2	60.5	50.1	57.8
National Foundations, Societies & Associations	20.3	24.1	21.3	23.4
National Companies	1.8	3.1	1.7	6.8
Provincial Government	9.7	0.0	9.6	0.0
Other Provincial and Local Sources	7.0	3.5	7.2	4.5
Internal University	2.4	4.9	2.1	3.4
Foreign	5.4	3.9	5.9	4.1
Miscellaneous	1.2	0.0	1.9	0.0

SOURCE: Calculated from Table 4.11

institutions.[8] Some 50% of the cost of construction of the H.S.C. came from the Health Resources Fund.[9]

Part of this funding was used to purchase research equipment for the Faculty of Medicine. While one can justifiably argue that 50% was Federal and 50% Provincial monies, the convention used here is to attribute the budget used for research equipment to the Health Resources Fund and ignore the specific source(s).

From Table 4.13 we see that over the years 1973-74 to 1978-79, some $1,690,475.00 was spent on research equipment in the Faculty of Medicine. Fig. 4.2 shows this Health Resources Fund expenditure in terms of the percent of the Faculty of Medicine budget. While this fund was a Federal program, only a limited number of Medical Schools were able to avail of this fund for major construction. They were:

a) Memorial, St. John's
b) Sherbrooke, Quebec
c) McMaster, Ontario
d) Calgary, Alberta[10]

Medical Schools have to depend on a variety of sources for funding. Memorial is no exception.

4.7 INTERNAL SOURCES:

The question of indirect support for research was dealt with in section 4.4. However, there is a small amount of funds, some

TABLE 4.13

EXPENDITURES ON RESEARCH EQUIPMENT

FROM THE HEATLH RESOURCES FUND

FOR YEARS 1971-72 TO 1979-80

YEAR	AMOUNTS
1971-72	$ 0.00
1972-73	$ 0.00
1973-74	$ 322,527.00
1974-75	$ 210,311.00
1975-76	$ 609,830.00
1976-77	$ 216,284.00
1977-78	$ 278,457.00
1978-79	$ 53,066.00
1979-80	$ 0.00
TOTAL	$1,690,475.00

SOURCE: Memorial University of Newfoundland, Faculty of Medicine, Scientific Equipment Committee.

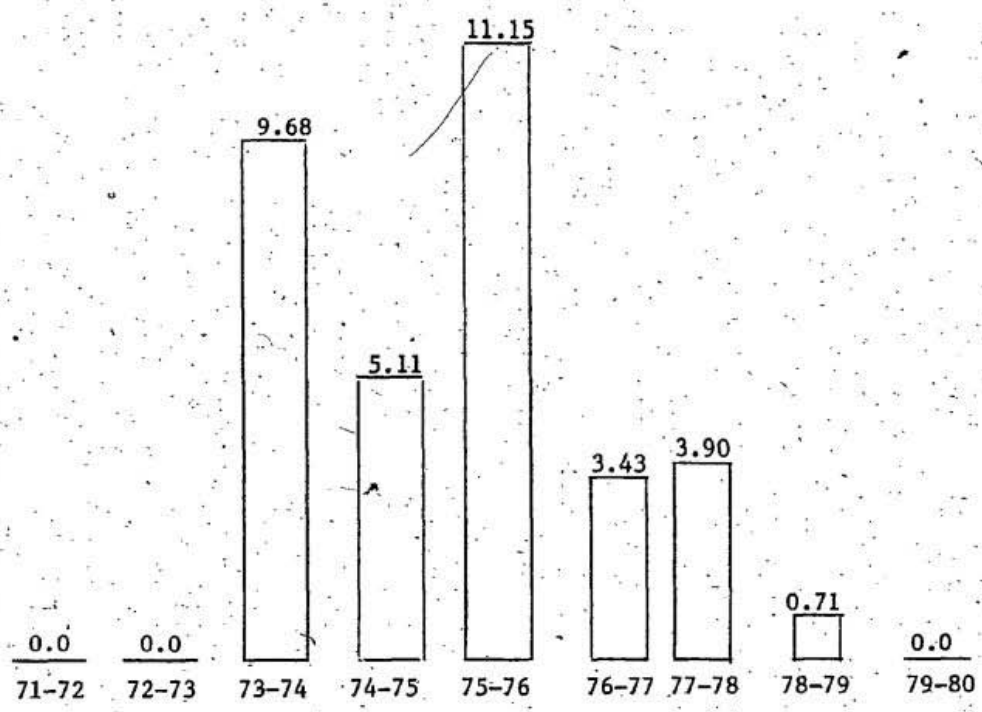

FIGURE 4.2: H.R.F. AS A PERCENTAGE OF THE TOTAL FACULTY OF MEDICINE BUDGET FOR THE YEARS 1971-72 TO 1979-80

SOURCE: Calculated from Tables 4.8 and 4.13.

$50,000 approximately in 1979-80, which is directly allocated for research by the Faculty of Medicine through the Advisory Committee on Research and Development.[11]

While these funds are not large they do provide a vehicle for fostering specific projects that do not have outside funding or assist in faculty development.[12] Table 4.10 shows these amounts expended for the period 1976-77 to 1979-80.

4.8 GRANT SOURCES:

This section deals more specifically with individual sources of grants for direct research support.

Tables 4.14 and 4.15 give a good indication of the sources of grants awarded to the Faculty for the years 1974-75 to 1978-79 as reported by the Office of Research.[13] Here we see the variation in the sources of research funds on a year-to-year basis. It is important to note from Table 4.15 that there has not been an increase in the total number of grants from sources outside the Faculty of Medicine (61 in 1974-75 vs. 57 in 1978-79). It should be noted that this information is taken from a data base constructed on the basis of grants awarded. When compared with Table 4.21 there appears to be a discrepancy. However, this is due to the fact that Table 4.21 is constructed on the basis of grants in use in any particular year. The large numbers in 1978-79, for example, in Table 4.21 indicate that there were monies remaining in these grants from previous years which were expended

TABLE 4.14

NUMBERS OF RESEARCH GRANTS AWARDED BY SOURCE FOR YEARS 1974-75 TO 1978-79

SOURCE	1974-75	1975-76	1976-77	1977
Medical Research Council	17	20	18	20
Health and Welfare Canada	12	6	8	10
Can Vet Aff	1			
Comm. Canada		4	2	1
Public Service C.			1	
N.R.C.	1	1	1	
Canada Council				
DSS				
U.S. PSC	1			
U.S. HEW		1		
NIH		1		
WHO	1	1	1	
St. Clare's		1		
Newfoundland	1		1	
Faculty of Medicine	1	8	9	14
Can Heart	7	3	2	2
Can Cancer	2	2	2	
Can Kidney	2	1		1
Can Arthritis	2	1	1	1
Muscular Dystrophy			2	1
March of Dimes	1	2	2	2
NCI				2

TABLE 4.14

RESEARCH GRANTS AWARDED BY SOURCE FOR YEARS 1974-75 TO 1978-79

974-75	1975-76	1976-77	1977-78	1978-79
17	20	18	20	21
12	6	8	10	8
1				
	4	2	1	
		1		
1	1	1		
				1
				1
1				
	1			
	1			
1	1	1		
	1			
1		1		
1	8	9	14	18
7	3	2	2	2
2	2	2		
2	1		1	1
2	1	1	1	2
		2	1	3
1	2	2	2	2
			2	3

TABLE 4.14

NUMBERS OF RESEARCH GRANTS AWARDED BY SOURCE FOR YEARS 1974–75 TO 1978-79

SOURCE	1974–75	1975-76	1976-77	1977
Richard & Jean Ivey			1	1
Detueiller Travelly F.			1	
Maughlin Travelly F			1	
Daymon Runyan	1			
Dev Therapy	1	1	1	
Garfield Weston				1
Windsor				1
Donner Can				

SOURCE: Memorial University of Newfoundland Office of Research, Research Inventory, Years 1974-

TABLE 4.14

ESEARCH GRANTS AWARDED BY SOURCE FOR YEARS 1974-75 TO 1978-79

7 -75	1975-76	1976-77	1977-78	1978-79
		1	1	1
		1		
		1		
1				
1	1	1		
			1	1
			1	1
				1

foundland Office of Research, Research Inventory, Years 1974-75 to 1978-79.

TABLE 4.15

NUMBERS OF GRANTS AWARDED FOR RESEARCH BY MAJOR SOURCE FOR YEARS 9174-75 TO 1978-79

SOURCE	1974-75	1975-76	1976-77	1977-78	1978-79
1. Government/ Federal,					
i) MRC	17	20	18	20	21
ii) H.& W.C.	12	6	8	10	8
iii) Other	2	5	4	1	2
TOTAL FEDERAL	31	31	30	31	31
2. Government/ Provincial	1	-	1	-	-
3. Voluntary Agencies	14	9	9	9	13
4. Private Foundations	2	1	4	3	4
5. Industry	11	3	5	4	9
6. Foreign	2	3	1	-	-
7. Faculty of Medicine	1	8	9	14	18
8. Other	-	1	-	-	-
TOTALS	62	56	59	61	75
TOTAL (EXCLUDING FACULTY OF MEDICINE)	61	48	50	47	57

NOTE: EXCLUDES H.R.F. AWARDS

SOURCE: Memorial University of Newfoundland Office of Research, Research Inventory, Years 1974-75 to 1978-79.

in addition to any grants awarded for that specific year.

Tables 4.16 to 4.20 contain a breakdown of grants awarded by source and amount for years 1974-75 to 1978-79.[16] Appendix A includes a brief description of these grant sources indicating procedures for application, etc.

4.9 GRANT TYPES:

Grants vary in type. Some may be awarded for one year, some might be continuing grants awarded say for three years with specific amounts for each of the three years.

Using data collected by the Finance Office for the annual Association of Canadian Medical Colleges questionnaire, we see in Table 4.21 that there has been a variation in the numbers and amounts in all categories with no definite trend over the period 1974-75 to 1979-80.

What is also significant is the number of awards. There has been no increase in the total number of awards of scholarships, fellowships, etc.

Table 4.22 presents data on non-Government support for research as compiled from information supplied in the Medical Research Council's Reference List of Health Sciences Research in Canada.[14] When compared with Table 4.7, Page 35, we see that non-Government support is approximately 25% of total support for each of the

TABLE 4.16

FACULTY OF MEDICINE
RESEARCH GRANT FUNDING
1974 - 1975

M.R.C.	$275,200.00
National Health Welfare Canada	264,300.00
March of Dimes	22,800.00
Canadian Heart	83,600.00
Canadian Cancer Institute	20,900.00
Arthritis Society	12,600.00
Canadian Kidney Foundation	8,000.00
Canadian Foundation for Development of Therapeutics	20,000.00
U.S. (PHS)	25,600.00
Newfoundland Government	1,500.00
N.R.C.	5,000.00
Pharmaceutical Canada	1,200.00
Frost	3,800.00
Burroughs Wellcome	10,400.00
Ayerst Labs	1,000.00
Sterling	600.00
Merck, Sharp, & Dohme (Can.)	2,000.00
Astra Limited	22,000.00
Teagle	1,000.00
Searle	7,500.00
World Health Organization	1,500.00
Can. Veterans Affairs	7,200.00
Damon Runyon	9,000.00
TOTAL	$806,700.00

of which: M.R.C. = 34%
N.H.W. = 33%
Assoc/Inst = 21%
Private Foundations = 0
Commercial Co. = 6%
Other = 6%

SOURCE: Memorial University of Newfoundland, Office of Research, Research Inventory, Year 1974-75.

TABLE 4.17

FACULTY OF MEDICINE
RESEARCH GRANT FUNDING
1975-76

M.R.C.	$369,200.00
National Health Welfare Canada	324,700.00
March of Dimes	38,600.00
Canadian Heart	53,900.00
Canadian Cancer Institute	22,200.00
Arthritis Society	15,400.00
Canadian Kidney Foundation	1,000.00
Canadian Foundation for Development of Therapeutics	20,000.00
National Institute of Health	3,800.00
St. Clare's Hospital	7,300.00
N.R.C.	5,700.00
Schering Corporation Limited	800.00
Burroughs Wellcome	10,400.00
Searle	4,000.00
Communications Canada	72,700.00
World Health Organization	1,000.00
TOTAL	$950,700.00

of which: M.R.C. = 39%
N.H.W. (Canada) = 34%
Assoc/Inst = 16%
Commercial Co. = 2%
Other = 9%

SOURCE: Memorial University of Newfoundland, Office of Research, Research Inventory, Year 1975-76.

TABLE 4.18

FACULTY OF MEDICINE
RESEARCH GRANT FUNDING
1976-77

M.R.C.	$341,900.00
National Health Welfare-Canada	251,700.00
March of Dimes	26,100.00
Canadian Heart	14,000.00
Canadian Cancer Institute	30,200.00
Muscular Dystrophy Association	9,500.00
Arthritis Society	36,800.00
Canadian Foundation for Development of Therapeutics	20,000.00
Schering Corporation	800.00
Frosst	6,000.00
Pfizer Company	6,600.00
Burroughs Wellcome	6,300.00
Searle Company	1,000.00
Communications Canada	165,000.00
N.R.C.	5,900.00
Richard and Jean Ivey Fund	10,000.00
Public Services Comm.	1,400.00
Provincial Government Health Award	2,500.00
MacLaughlin Travelling Fellowship	15,000.00
Detweiller Travelling Fellowship	2,000.00
World Health Organization	1,500.00
TOTAL	$954,200.00

of which: M.R.C. = 36%
N.H.W. (Can) = 26%
Assoc/Inst = 14%
Private Foundations = 3%
Commercial Co. = 2%
Other = 9%

SOURCE: Memorial University of Newfoundland, Office of Research, Research Inventory, Year 1976-77.

TABLE 4.19

FACULTY OF MEDICINE
RESEARCH GRANT FUNDING
1977-78

M.R.C.	$454,200.00
National Health Welfare Canada	246,400.00
March of Dimes	37,000.00
Canadian Heart	64,500.00
Kidney Foundation of Canada	20,000.00
Muscular Dystrophy Association	18,800.00
Arthritis Society	15,600.00
N.C.I.	15,800.00
Burroughs Wellcome	6,300.00
Pfizer Co.	6,600.00
Frosst	4,600.00
Astra Chemicals	20,000.00
Communications Canada	12,000.00
Garfield Weston Foundation	5,000.00
Windsor Foundation	35,000.00
Richard and Jean Ivey Fund	75,000.00
TOTAL	$1,036,800.00

of which: M.R.C. = 44%
N.H.W. (Can.) = 24%
Assoc/Inst = 13%
Private Foundation = 11%
Commercial Co. = 4%
Other = 4%

SOURCE: Memorial University of Newfoundland, Office of Research, Research Inventory, Year 1977-78.

TABLE 4.20

FACULTY OF MEDICINE
RESEARCH GRANT FUNDING
1978-79

M.R.C.	$ 540,293.00
Health and Welfare Canada	227,024.00
DSS	26,343.00
Communications Canada	14,304.00
Can. Heart	89,280.00
N.C.I.	68,066.00
Arthritis Society	16,254.00
Kidney	12,213.00
Muscular Dystrophy Association	29,093.00
Gest Brocades	15,000.00
Fison Corporation	3,400.00
Frosst	37,000.00
Ciba-Geigh	28,468.00
Merck, Sharpe & Dohme	1,000.00
Smith, Cline & French	29,500.00
Astra Chemical	3,000.00
Burroughs Wellcome	7,100.00
Donner Foundation	75,052.00
Richard & Jean Ivey Fund	10,000.00
Windsor	17,500.00
Garfield Weston	5,000.00
TOTAL	$1,294,890.00

of which: M.R.C. = 42%
N.H.W. = 18%
Assoc/Inst = 20%
Private Foundations = 8%
Commercial Co. = 10%
Other = 3%

SOURCE: Memorial University of Newfoundland, Office of Research, Research Inventory, Year 1978-79

TABLE 4.21

RESEARCH GRANTS AND AWARDS IN USE BY TYPE AND TOTAL AMOUNTS FOR YEARS 1974-

GRANTS	1974-75	1975-76	1976-77	1977-78
Term Grants	408,204(12)	521,507(21)	451,733(18)	330,432(17)
Continuing Grants	59,790(8)	144,115(12)	119,328(11)	74,692(7)
New Grants	148,343(14)	129,315(9)	15,520(1)	402,114(18)
Grants for one year only	159,880(9)	129,226(15)	224,764(22)	74,624(18)
General Research Grants	0	0	0	44,500(2)
Major Equipment Grants	0	0	0	6,000(1)
Maintenance Grants	0	0	0	0
Group Grants	0	0	6,500(1)	18,395(2)
Program Grants	0	0	0	0
Development Grants	0	0	0	
Other	0	0	40,474(5)	135,084(4)
	(43)	(57)	(58)	(69)
AWARDS				
Associateships				15,606(1)
Scholarships				13,250(1)
Fellowships	28,000(2)	24,400(2)	23,058(2)	6,167(1)
Research Professorships	29,502(2)	33,587(2)	36,034(2)	
Visiting Scientists				
Visiting Professionals				
Studentship				4,500(1)
Summer Undergraduate Research Scholarships				
Other				
	(4)	(4)	(4)	(4)
TOTALS	(47)			(73)

SOURCE: Memorial University of Newfoundland Faculty of Medicine, Finance Office

TABLE 4.21

'ARDS IN USE BY TYPE AND TOTAL AMOUNTS FOR YEARS 1974-75 TO 1979-80

5-76	1976-77	1977-78	1978-79	1979-80
07(21)	451,733(18)	330,432(17)	354,181(12)	777,145(24)
15(12)	119,328(11)	74,692(7)	411,711(16)	254,865(11)
15(9)	15,520(1)	402,114(18)	357,134(19)	449,250(26)
26(15)	224,764(22)	74,624(18)	63,860(18)	43,168(14)
0	0	44,500(2)	40,000(1)	40,000(1)
0	0	6,000(1)	0	0
0	0	0	0	0
0	6,500(1)	18,395(2)	0	0
0	0	0	80,649(2)	0
0	0		100,756(3)	97,426(3)
0	40,474(5)	135,084(4)	72,537(6)	51,226(1)
(57)	(58)	(69)	(77)	(80)
		15,606(1)	16,254(2)	17,611(1)
		13,250(1)		
)0(2)	23,058(2)	6,167(1)	7,033(1)	
7(2)	36,034(2)			
		4,500(1)	6,000(1)	6,000(1)
(4)	(4)	(4)	(4)	(2)
(61)	(62)	(73)	(81)	(82)

foundland Faculty of Medicine, Finance Office

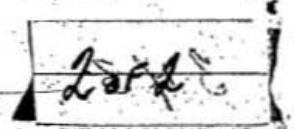

TABLE 4.22

NON-GOVERNMENT SUPPORT OF RESEARCH

SCHOOL	1978-79 OPR GRANTS NON-GOVERNMENT	SCHOLARSHIPS, STUDENT FELLOWSHIPS	TOTAL	RANK	OPR GRA NON-GOV
TORONTO	3,022,944 (131)	841,425(83)	3,864,419 (184)	1	3,720,20 (13
McMASTER	1,768,671 (65)	713,298(44)	2,481,969 (109)	2	2,194,30 (7
U.B.C.	1,606,497 (65)	403,560(26)	2,010,057 (91)	3	1,538,72 (
U.W.O.	977,949 (45)	292,635(17)	1,270,584 (62)	4	1,215,84 (5
McGILL	1,067,251 (48)	191,980(12)	1,259,231 (60)	5	1,208,05 (4
ALBERTA	874,054 (42)	294,510(19)	1,168,564 (61)	6	1,506,1 (4
QUEEN'S	775,605 (32)	307,580(14)	1,083,455 (46)	7	1,042,842 (37
MANITOBA	823,598 (40)	174,530(12)	998,127 (52)	8	860,97 (42
SASKATCHEWAN	697,967 (30)	140,700(7)	838,667 (37)	9	703,14 (33
CALGARY	528,843 (28)	223,000(9)	751,843 (37)	10	561,353 (26
DALHOUSIE	562,539 (27)	60,000(5)	622,539 (32)	11	596,774 (25

TABLE 4.22

NON-GOVERNMENT SUPPORT OF RESEARCH

9 OLARSHIPS, IDENT LOWSHIPS	TOTAL	RANK	1979-80 OPR GRANTS NON-GOVERNMENT	SCHOLARSHIPS, STUDENT FELLOWSHIPS	TOTAL	RANK
1,425(83)	3,864,419 (184)	1	3,720,204 (138)	1,010,907(60)	4,731,111 (198)	1
3,298(44)	2,481,969 (109)	2	2,194,300 (72)	855,910(51)	3,050,210 (123)	2
3,560(26)	2,010,057 (91)	3	1,538,728 (54)	357,450(27)	1,896,178 (81)	3
2,635(17)	1,270,584 (62)	4	1,215,844 (52)	323,580(21)	1,539,424 (73)	5
1,980(12)	1,259,231 (60)	5	1,208,053 (49)	260,710(18)	1,468,763 (67)	6
4,510(19)	1,168,564 (61)	6	1,506,144 (43)	264,510(19)	1,770,654 (62)	4
7,580(14)	1,083,455 (46)	7	1,042,842 (37)	312,080(17)	1,354,922 (54)	7
4,530(12)	998,127 (52)	8	860,979 (42)	251,094(17)	1,112,073 (59)	8
0,700(7)	838,667 (37)	9	703,148 (33)	155,110(10)	858,258 (43)	9
3,000(9)	751,843 (37)	10	561,353 (26)	184,250(10)	745,603 (36)	10
0,000(5)	622,539 (32)	11	596,774 (25)	130,500(7)	727,274 (32)	11

TABLE 4.22

NON-GOVERNMENT SUPPORT OF RESEARCH

SCHOOL	OPR GRANTS NON-GOVERNMENT	SCHOLARSHIPS, STUDENT FELLOWSHIPS	TOTAL	RANK	OPR GRANT NON-GOVER
SHERBROOKE	343,739 (24)	151,860(8)	495,599 (32)	12	389,577 (25)
MONTREAL	278,340 (23)	195,430(13)	473,770 (36)	13	247,370 (16)
OTTAWA	394,907 (22)	63,110(5)	458,017 (27)	14	510,847 (24)
LAVAL	269,216 (17)	113,210(6)	382,426 (23)	15	330,971 (21)
MEMORIAL	328,565 (15)	30,000(1)	368,565 (16)	16	428,984 (20)

NOTE: 1) Where a grant was awarded jointly to a University and another institution, one-half of the

2) Figure in brackets is total number of grants, scholarships, etc.

3) Rank order is based on dollar amounts.

SOURCE: Reference List of Health Sciences Research in Canada, Years 1978-79 and 1979-80, Ottawa, 1979

TABLE 4.22

NON-GOVERNMENT SUPPORT OF RESEARCH

HOLARSHIPS, UDENT IPS	TOTAL	RANK	OPR GRANTS NON-GOVERNMENT	SCHOLARSHIPS, STUDENT FELLOWSHIPS	TOTAL	RANK
1,860(8)	495,599 (32)	12	389,577 (25)	151,250(7)	531,827 (32)	13
5,430(13)	473,770 (36)	13	247,370 (16)	151,860(12)	399,230 (28)	16
3,110(5)	458,017 (27)	14	510,847 (24)	100,020(6)	610,867 (30)	12
,210(6)	382,426 (23)	15	330,971 (21)	130,360(7)	461,331 (28)	15
,000(1)	368,565 (.16)	16	428,984 (.20)	36,750(2)	465,734 (22)	14

y to a University and another institution, one-half of the amount is included.

er of grants, scholarships, etc.

ounts.

ch in Canada, Years 1978-79 and 1979-80, Ottawa, 1979 and 1980.

16 Medical Schools. Memorial, while ranking 16th in terms of total support, ranks 14th in terms of non-Government support.

CHAPTER 5 - OTHER FACTORS

5.1 INTRODUCTION:

To complete the picture other factors such as

a) standing of the school

b) publications

c) year established

d) provincial sales tax

e) success rate on applications

f) areas of research activity

are studies to ascertain their impact on funding.

These are factors which have a direct and indirect impact on the view of the school held by others and as such may help to explain the trends in financing experienced by the school.

5.2 STANDING OF THE SCHOOL:

Each Medical School in Canada is surveyed for accreditation by a number of agencies depending on the programs they offer.

The accreditations are performed every five years for both the undergraduate and postgraduate programs.

These accreditations take into account the quality of the educational programs, the quality of the faculty as well as the activities in terms of research.

Memorial has been judged worthy of accreditation on each survey.[1]

Thus the school measures up to the standard set by these accreditation bodies.

In 1975 the Standing Committee on Research of the Association of Canadian Medical Colleges assessed the quality of research effort in the Faculty of Medicine. This study concluded that "the quality of research done was recognized nationally and internationally to be of high calibre".[2]

There is no doubt then that the school should fare well from the point of view of its peers.

5.3 PUBLICATIONS:

A computer search was made using the Science Citation Index[3] to ascertain the number of papers published in accredited scientific journals. It was reasoned that since publishing is an indication of the activity of the faculty and also a form of peer reviews this might be an important discriminator.

Table 5.1 shows this data for the years 1974 to 1980. The trend has improved in number of papers published. Looking at the ratio of papers published to numbers of full-time faculty suggests that 1977 was a bad year; otherwise, there has been a constant publication percentage in the order of 65% since 1974. Table 5.2 is another view of this data using the number of faculty in year -2 as a divisor.

TABLE 5.1

PAPERS PUBLISHED IN SCIENTIFIC JOURNALS
BY FULL TIME FACULTY (FTF) AND RATIOS OF FTF TO NUMBER OF PAPERS
FOR YEARS 1974 - 1980

YEAR	# PAPERS	# FULL-TIME FACULTY (FTF) IN YEAR	RATIO # OF PUBLICATIONS TO # FTF
1974	29	96	.30
1975	51	85	.60
1976	74	106	.70
1977	62	106	.58
1978	74	113	.65
1979	83	127	.65
1980*	34*		

* UP TO JULY 22, 1980.

NOTE: 1. Number of publications is based on calendar year.

2. Number of Faculty is based on faculty present in April of year, ie: 74 = April of 1974.

SOURCE: A) Number of papers -- Science Citation Index

B) Number of Full-time Faculty - Faculty of Medicine, Office of the Dean of Medicine.

TABLE 5.2

RATIO OF NUMBER OF PAPERS PUBLISHED PER YEAR TO NUMBER OF FULL-TIME FACULTY (FTF) USING NUMBER OF FTF IN YEAR MINUS 2

YEAR	# PAPERS	# FTF (YEAR -2)	RATIO # OF PAPERS / # FTF (YEAR -2)
1974	29	69	.42
1975	51	82	.62
1976	74	96	.77
1977	62	85	.73
1978	74	106	.70
1979	83	106	.78

SOURCE: a) Number of Papers: Science Citation Index

b) Number of Full-time Faculty: Memorial University of Newfoundland Faculty of Medicine, Office of the Dean of Medicine.

Year -2 was chosen on the basis that the move to a new school upsets the reserve and at the same time puts extra constraint on the time available for publishing. Also since the school appears to have a relatively young faculty it might take a year or two to get established.

The data in Table 5.2, Page 62 suggests a better publication record with 1979 showing a general improvement.

Unfortunately there is no data available from other schools to compare with Memorial.

5.4 YEAR ESTABLISHED:

The Faculty of Medicine at Memorial is Canada's newest Medical School. It was established in 1967.[4] One can see in Table 5.3 that M.U.N. is in a group of three schools established in the last 15 years. The import of the newness of the school is something which is very difficult to establish. However, the important thing to note here is that the school was established as a public school (not privately endowed) approximately 15 years ago and that the critical mass of faculty is only now being reached.

5.5 PROVINCIAL SALES TAX:

Memorial University is the only university in Canada which must pay Provincial Sales Taxes (presently 11%) on purchases of supplies and equipment.[5]

TABLE 5.3

YEAR OF ESTABLISHMENT OF
MEDICAL SCHOOL AND STATUS

SCHOOL	PUB/PRV	YEAR ESTABLISHED
McGill	PRV	1829
Laval	PRV	1853
Queen's	PRV	1854
Dalhousie	PRV	1868
Montreal	PRV	1877
Western	PRV	1882
Manitoba	PUB	1883
Toronto	PUB	1887
Alberta	PUB	1913
Saskatchewan	PUB	1926
Ottawa	PRV	1945
British Columbia	PUB	1950
Sherbrooke	PRV	1961
McMaster	PRV	1965
Calgary	PUB	1965
M.U.N.	PUB	1967

PUB - Public
PRV - Private

SOURCE: A.C.M.C. Forum, Vol. VII, #5, September-October, 1974, Table 1, p.6.

The consequence of this is to reduce the gross amount of monies received by a percentage. Based on a review of expenditures from grants given to M.U.N. and conversations with officials at M.R.C. and elsewhere it appears that an average 20% to 30% of grant monies are used for supplies and equipment. Thus, in 1979-80 the $1,736,691.00 gross amount received for direct research support was reduced by some $38,000.00 to $57,000.00.

5.6 APPLICATIONS:

An attempt was made to look at the success rate of the school in terms of applications made and grants and monies awarded. The only data available was for the Basic Sciences Division for 1979. Tables 5.4 and 5.5 summarize this data. In terms of dollars the overall success rate was 43%. The success rate for M.R.C. and Health and Welfare, two Federal agencies, was 52% and 51% respectively. Note also that the dollar amounts under consideration are unequal. The success rates for the other agencies are quite varied - from 0% to 96%.

5.7 AREAS OF RESEARCH:

The Research Directory for 1980 lists 69 Faculty engaged in Research in Faculty of Medicine of whom 5 were members of the Faculty of Science with a cross appointment to the Faculty of Medicine (see Table 5.6).

These researchers were engaged in a variety of research projects. The majority of the projects could be considered as directed

TABLE 5.4

APPLICATIONS AND AWARDS FOR
BASIC SCIENCE DIVISION, 1979

# GRANT APPLICATIONS	YEAR COVERED BY AMOUNT	AMOUNTS REQUESTED	# OF AWARDS (1)	AMOUNTS AWARDED
24[2]	1980-81	914,321	12	345,717
13[3]	1981-82	400,498	7	199,690
3[4]	1982-83	126,353	2	80,750
TOTALS		1,501,152[5]		626,157[5] [7]
		(1,447,354)[6]		

1. Twenty-four applications in total, 11 rejections; 1 yet to be decided.
   Two one-year grants were awarded, over two years.
   One two-year grant was awarded over one year.
   One two-year grant was awarded over three years.
   One three-year grant was awarded over two years.

2. One year or more covered by application.

3. Two years or more covered by application.

4. Three years covered by application.

5. $53,798 grant application yet to be adjudicated.

6. Value actually adjudicated.

7. Represents a success rate of 43% of value applied for.

SOURCE: Memorial University of Newfoundland, Faculty of Medicine, Office of Associate Dean for Basic Science.

TABLE 5.5

APPLICATIONS AND AWARDS
FOR
BASIC SCIENCE DIVISION, 1979

AGENCY	AMOUNT OF APPLICATION	AMOUNT OF AWARD	PERCENT
M.R.C.	$ 969,721	$ 509,617	52%
Health & Welfare	$ 87,517	$ 45,251	51%
N.C.I.C.	$ 158,613	$ 29,489	18%
Kidney Foundation	$ 138,349	$ 13,000	9%
Arthritis Society	$ 29,848	$ 28.800	96%
Canadian Heart Foundation	$ 63,306	$ 0	0%
Muscular Dystrophy	$ 53,798	Not yet adjudicated	
TOTALS	$ 1,501,152	$ 626,157	43%

NOTE: These figures apply only to applications made in year 1979 and actual awards as a result of these applications. Total monies received in 1979 were excess of this since it includes monies awarded for 1979 from applications in previous years.

SOURCE: Memorial University of Newfoundland, Faculty of Medicine, Office of Associate Dean for Basic Science.

TABLE 5.6

FACULTY RESEARCH DIRECTORY, AREA OF RESEARCH SPECIALTY, RANK, CURRENT FUNDING SOURCE (1

NAME	RESEARCH SPECIALTY	CURRENT FUNDING SOURCE - 1977	DIVISION AND RANK - 1977			DIVISION RANK - 1	
			B	CL	CM	B	CL
Allderdice, P.	Cytogenetics	MRC + NAT Foun., March of Dimes, U.S.	1P			P	
Bradley, D.E.	Microbiology	MRC	1P			P	
Brown-Grant, K (2)	Endocrinology	--	P			P	
Bryant, D.C. (2)	Population Dynamics	--			1P		
Burness, A.T.	Molecular Virology	NIH (U.S.)	1P			P	
Campbell, J.P.	Pathology	Health & Welfare Canada		P		Moved	
Chambers, L.W.	Health Care Delivery	Health & Welfare Canada, NCI, Canada			2P	Moved	
Chandra, P.K.	Immunology; Nutrition	World Health Organization Research & Development		P			
Charles, D.	Reproductive Medicine	MRC, NIH (U.S.)		P		Moved	
Churchill, D.M.	Clinical Nephrology	--		2P			1P
Cox, A.R.	Cardiology	--		P*			P
Cox, M.	Communication/ Development Disorders of Children	Communications Canada		(C)			C

TABLE 5.6

AREA OF RESEARCH SPECIALTY, RANK, CURRENT FUNDING SOURCE (IF ANY) FOR 1977 & 1980

CURRENT FUNDING SOURCE - 1977	DIVISION AND RANK - 1977			DIVISION AND RANK - 1980			CURRENT FUNDING SOURCE - 1980
	B	CL	CM	B	CL	CM	
MRC + NAT Foun., March of Dimes, U.S.	1P			P			MRC
MRC	1P			P			MRC
—	P			P			--
—			1P			1P	--
NIH (U.S.)	1P			P			MRC, NCIC
Health & Welfare Canada		P		Moved			
Health & Welfare Canada, NCI, Canada			2P	Moved			
World Health Organization Research & Development		P					WHO, R.&D., Fison Corp.
MRC, NIH (U.S.)		P		Moved			
—		2P			1P		—
—		P*			P		—
Communications Canada		(C)			C		Communications Canada

NAME	RESEARCH SPECIALTY	CURRENT FUNDING SOURCE - 1977	DIVISION AND RANK - 1977	DIVISI RANK - 1
English, L.S.	Immunology	MRC		
Farid, N.R.	Endocrinology/ Immunology	MRC	2P	1P
Fernandez, P.G.	Hypertension	Merck, Sharpe, & Dohme, & Pfizer	2P	2P
Fodor, G.	Clinical Epidemiology	MRC & Canadian Heart	P	P
Geduldig, D.	Membrane Bio-Physics	--	1P	1P
Green, R.C.	Biochemistry	MRC	2P	1P
Hall, B.G. (3)	Molecular Biology	MRC	2P	Moved
Harris, R.S.	Radiodiagnosis	--	P	P
Heughan, C.	Surgery	MRC	2P	1P
Hodgkin, K.	General Practice	--	P	Moved
Hondre, L.H.	Reproductive Pathology	--	1P	1P
House, M.	Telemedicine	Communications Canada	P	P
Huntsman, R.G.	Haematology	--	P	P
Hurry, D.J.	Obstetrics & Gynecology	--	2P	2P

CURRENT FUNDING SOURCE - 1977	DIVISION AND RANK - 1977 B CL CM	DIVISION AND RANK - 1980 B CL CM	CURRENT FUNDING SOURCE - 1980
MRC	2P	Moved	
MRC	2P	1P	MRC, March of Dimes
Merck, Sharpe, & Dohme, & Pfizer	2P	2P	Merck, Sharpe, & Dohme, and CIBA-Geigy
MRC & Canadian Heart	P	P	Health & Welfare
--	1P	1P	MRC
MRC	2P	1P	On Faculty but not listed 1980
MRC	2P	Moved	
--	P	P	On Faculty byt not listed 1980
MRC	2P	1P	On Faculty but not listed 1980
--	P	Moved	
--	1P	1P	On Faculty but not listed 1980
Communications Canada	P	P	Supply & Services Canada
--	P	P	--
--	2P	2P	On Faculty but not listed 1980

NAME	RESEARCH SPECIALTY	CURRENT FUNDING SOURCE - 1977	DIVISION AND RANK - 1977			DIVISI RANK -	
			B	CL	CM	B	CL
Hutton, C.	Biochemical Pathology	--		C			C
Kenny, F.(5)	Psychological Medicine	--			L	M	
Kepkay, D.L.	Gastroenterology	--		1P		Moved	
Larsen, B.	Immunogenetics	--	2P				21
LeGal, Y.M.	Cardiovascular Physiology	Canadian Heart Foundation		R			2F
MacDiarmid, W.D.(1)	Endocrinology			P		Moved	
McKilligan, H.	Community Medicine	R & D			2P		
Madhavankutty, K.	Biochemical Pathology	Canadian Heart Foundation		C			1P
Martin, J.(2)	Rheumatology	R & D		P			P
Mellor, C.S.	Psychiatry	Astra Chemicals		P			P
Michalski, C.J.	Molecular Biology	--	2P			1P	
Middleton, R.B.(4)	Microbial Genetics	NRC		P		Moved	

CURRENT FUNDING SOURCE - 1977	DIVISION AND RANK - 1977 B	CL	CM	DIVISION AND RANK - 1980 B	CL	CM	CURRENT FUNDING SOURCE - 1980
--		C			C		On Faculty but not listed 1980
--			L	M		2P	MRC
—		1P		Moved			
--		2P			2P		MRC, MDAC
Canadian Heart Foundation		R			2P		Canadian Heart Foundation
		P		Moved			
R & D			2P			1P	R & D and Health and Welfare
Canadian Heart Foundation		C			1P		Can. Cystic Fibrosis
R & D		P			P		—
Astra Chemicals		P			P		On Faculty but not listed 1980
--		2P			1P		NRC
NRC		P		Moved			

NAME	RESEARCH SPECIALTY	CURRENT FUNDING SOURCE - 1977	DIVISION AND RANK - 1977 B	CL	CM	DIVISION RANK - 1 B	CL
Neuman, R.S.	Neuropharmacology	MRC	2P			1P	
Orr, J.C. (6)	Biochemistry	MRC	P			P	
Pfeiffer, C.J.	Gastroineestinal Pathopsychology	NCI (Can.), MRC, R.&D.	P			P	
Pryse-Phillips, W.	Neurology			1P			1P
Rowe, A.T.	Geriatrics	Health & Welfare Canada		1P			P
Segovia, J.	Sociomedical Sciences	PAHO, State U of			1P		
Sells, B.	Molecular Biology	MRC, March of Dimes, NCL (Can.), Muscular Dystrophy	P			P	
Senciall, I.R.	Biochemistry	MRC	2P			1P	
Snellen, J.W.	Applied Physiology		P			P	
Szczepanski, M.M.	Experimental Physiology		2P			Moved	
Triggle, C.R.	Smooth Muscle Physiology	MRC	2P			1P	
Tweeddale, M.G.	Clinical Pharmacology	Canadian Heart, Searle Canadian Foundation for Advancement of Clinical Pharmacology		2P			1P

CURRENT FUNDING SOURCE - 1977	DIVISION AND RANK - 1977			DIVISION AND RANK - 1980			CURRENT FUNDING SOURCE - 1980
	B	CL	CM	B	CL	CM	
MRC	2P			1P			MRC
MRC	P			P			--
NCI (Can.), MRC, R.&D.	P			P			NCIC, R & D, UIC
		1P			1P		R & D, MDAC
Health & Welfare Canada		1P			P		--
PAHO, State U of			1P			1P	NCIC
MRC, March of Dimes, NCL (Can.), Muscular Dystrophy	P			P			MRC. MDAC, March of Dimes
MRC	2P			1P			MRC, American C.S.
	P			P			--
	2P			Moved			
MRC	2P			1P			MRC, CHF
Canadian Heart, Searle Canadian Foundation for Advancement of Clinical Pharmacology		2P			1P		MRC, CHF, On Faculty but not listed 1980.

NAME	RESEARCH SPECIALTY	CURRENT FUNDING SOURCE - 1977	DIVISION AND RANK - 1977			D R B
			B	CL	CM	
Walley, R.L.	Obstetrics & Gynecology	--		2P		
Way, R.C.	Pediatric Cardiology	Can. T. B. Assoc.		1P		
White, F.P. (3)	Neurochemistry	MRC	1P			1P
White, S.	Neuroscience	MRC	2P			1P
Brosnan, J.T. (7)	Intermediary Metabolism	MRC	1P			1P
Brosnan, M.E. (7)	Biochemical Endocrinology	MRC	1P			1P
Feltham, L.A.W. (7)	Biochemistry	NRC	P			P

NAME	RESEARCH SPECIALTY	CURRENT FUNDING SO 1980
Ali, S.K. (2)	Haematology/Oncology	--
Avis, P.	Immunology	--
Barrowman, J.	Gastroenterology	--
Bear, J.C.	Human Genetics	--
Bieger, D.	Neuropharmacology	MRC, Illinois Gen.
Boyle, S.M.	Microbiology	MRC

CURRENT FUNDING SOURCE - 1977	DIVISION AND RANK - 1977 B	CL	CM	DIVISION AND RANK - 1980 B	CL	CM	CURRENT FUNDING SOURCE - 1980
--		2P			1P		Newfoundland Government
Can. T. B. Assoc.		1P			1P		--
MRC		1P			1P		MRC
MRC		2P			1P		MRC
MRC		1P			1P		MRC
MRC		1P			1P		MRC, Banting Res F.
NRC		P			P		NSER

PECIALTY	CURRENT FUNDING SOURCE 1980	DIVISION & RANK B	CL	CM
y/Oncology	--	S		
	--		P	
rology	--		P	
tics	--		2P	
ology	MRC, Illinois Gen.		1P	
	MRC		2P	

NAME	RESEARCH SPECIALTY	CURRENT FUNDING SOURCE 1980
Bruce-Lockhart, P.L.	Epidemiology Hypertension	Health & Welfare Canada
Chalmers, I.	Rheumatology/Immunology	Arthritis Society
Edstrom, H.W.	Respiratory Disease	--
Fine, A.	Intermediary Metabolism	--
Gault, M.H.	Nephrology	MRC, Kidney Foundation,
Hoekman, T.B.	Neurophysiology, Pharmacology	MRC
Huang, S.	Liver	MRC
Johnson, G. J.	Ophthalmology	CNIB
Kiruluta, H.G.	Urology	R & D, Kidney Foundatio
Kutty, P.K.	Gastroenterology	R & D
Kwan, A.	Surgery	R & D
Liepins, A.	Cell Biology/Immunology	--
Lobban, M.	Physiology	BMRC
Marshall, W.H.	Immunology	NCI, MRC
Millar, R.A.	Anaesthesia	--
Moudgil, G.C.	Anaesthesia	MRC
Payne, R.H.	Biochemical Genetics	
Rusted, I.E.	Endocrinology	NCIC
Scott, T.M.	Anatomy	MSC, Kidney Foundation,
Snedden, W.	Biochemistry	MRC
Tudiver, F. (2)	Family Practice	--
Younghusband, H.B.	Virology	

SPECIALTY	CURRENT FUNDING SOURCE 1980	DIVISION & RANK R	
logy Hypertension	Health & Welfare Canada		R
logy/Immunology	Arthritis Society	1P	
ory Disease	--	1P	
iary Metabolism	--	2P	
gy	MRC, Kidney Foundation, BWC	P	
siology, Pharmacology	MRC	1P	
	MRC	P	
ogy	CNIB	1P	
	R & D, Kidney Foundation	2P	
terology	R & D	2P	
	R & D	2P	
logy/Immunology	--	2P	
ry	BMRC	P	
y	NCI, MRC	P	
ia	--	P	
	MRC	2P	
al Genetics		1P	
logy	NCIC	P	
	MSC, Kidney Foundation, CHF	1P	
try	MRC	1P	
ractice	--	2P	
		2P	

NAME	RESEARCH SPECIALTY	CURRENT FUNDING SOURCE 1980
Bennett, G.F. (7)	Parasitology	NSERC, MRC
Threlfall, W. (7)	Parasitology	NSERC

1) Not currently doing research 1977.
2) Not currently doing research 1980.
3) Joint appointment with Biochemistry.
4) Joint appointment with Biology.
5) Joint appointment with I.R.H.A.
6) Joint appointment with Chemistry.
7) Members of Biochemistry Department with cross-appointment to Faculty of Medicine

P - Full Professor
1P - Associate Professor
2P - Assistant Professor
C - Clinical Associate
L - Lecturer
S - Research Scientist
R - Research Associate

SOURCE: Memorial University of Newfoundland, Office of Research, Research Directory Years 1977 and

SPECIALTY	CURRENT FUNDING SOURCE 1980	DIVISION & RANK B	CL	CM
ogy	NSERC, MRC	P		
ogy	NSERC	P		

P - Full Professor
1P - Associate Professor
2P - Assistant Professor
C - Clinical Associate
L - Lecturer
S - Research Scientist
R - Research Associate

th cross-appointment.

and, Office of Research, Research Directory Years 1977 and 1980

toward advancing the level of knowledge of medical science and technology. They benefit the Newfoundland population in a general sense. However, they are not directed at a specific aspect of the health care industry in this province.

The Research Directory for 1977 lists 55 Faculty engaged in Research in the Faculty of Medicine of whom 3 are members of the Faculty of Science with a cross appointment to the Faculty of Medicine (see Table 5.6, Page 68).

The studies in epidemiology of hypertension are of particular interest in that hypertension is a significant problem in the Newfoundland population and a natural laboratory exists with the different incidence and prevalence levels between east and west coasts of the province.

Researchers were able to attract research funds from National agencies to study this problem, not only because it was of significant local concern, but because the generality of the problem made it relevant to the advancement of knowledge about this subject generally. However, the cost of this project was borne by outside research monies. There were no provincial grants to assist in this work.

The genetics research has had similar experiences in funding. The particular linkage patterns, population movements, and marriage patterns in this province have provided a unique

opportunity for research.[6]

Similarly, the nephrology group has started to attract funding for a project re: kidney stones and the relation of soft water in Newfoundland.[7]

A project to study the import of a Family Practice Nurse concept was funded from national sources.[8]

The recent interest on the part of the Federal Government through a) the Department of Supply and Services and b) Communications Canada in utilizing satellitic technology in health care delivery, has led to a significant Telemedicine project with funding.[9]

The remaining projects are of such a nature that they can be carried out by any competent researcher at any Medical School or other such research establishment.

As a result of discussions with members of the Faculty of Medicine, however, one gets the impression that there is much more research being conducted with a particular relevance to the province than the above data would suggest.

Certainly the recent involvement of the Medical School in

a) nutrition study in Labrador
b) Northern Medicine I.G.A. project
c) Labrador Dust Study

confirms this argument.

The Faculty of Medicine has recently taken steps to document comprehensively its various research activities. This will probably result in a larger list of faculty engaged in research. To date the documentation has been on a voluntary basis (replying to a survey questionnaire). The new procedure is to have the project done in-house.

CHAPTER 6 - DISCUSSION AND ANALYSIS

6.1 INTRODUCTION:

The Medical School at Memorial University of Newfoundland is Canada's 16th and newest Medical School.[1] It functions within the health care community by providing teaching, research and patient care services.

It was deemed desirable by the school to carry out a review of its research funding as well as investigate any other related factors which might have significance in explaining or describing the present position of the school and which it should be cognisant of in its planning for the future.

It was agreed that the collection and analysis of the available data related to the research function would be the basis of this thesis.

6.2 SCOPE:

The scope of this case study was to research data sources, collect, present and analyse whatever data which served to explain, describe, throw light on funding of the research effort in the Medical School.

As in any study, the particular realities of time and effort will necessarily dictate the extent of the study. Thus, the major factors represented in this thesis are:

a) the organizational aspects

b) the financial aspects

i) sources

ii) amounts

iii) trends

c) the size and development of the school

d) areas of research

e) publications

These appeared to be the major influential factors. The discussion and analyses are presented in the following order:

a) organizational

b) financial

c) other

6.3 LIMITATIONS:

With any undertaking such as this, there are bound to be limitations.

One of the most important limitations of this study was the uniqueness of it. There is no study such as this in the literature, which would serve as a model. This thesis can be considered as an outline (good or bad) for analysing funding of Health Sciences Research at other Medical Schools.

Another limitation is the availability and compatibility of data on a year-to-year basis. The University and the Medical School have only recently begun to start collecting data of the type and in the format which would make possible a project

such as this. A great deal of data had to be collected and compiled from a variety of sources thus making the job of comparisons difficult since the data bases were not always compatible. Certain data refers to calendar year, eg: 1977, while other data covers an academic year, eg: 1977-78.

As a result of the project, I hope a record system will be instituted and maintained which will provide the data for the type of analysis and planning suggested.

In trying to make comparisons with other Medical Schools, etc., the lack of uniformity in collection and reporting (including the lack of reporting) has prevented a thorough treatment. One example is the University of Toronto. There a great deal of research by its faculty is performed at its affiliated hospitals and/or institutions. Much of the funding for this work is made directly to these institutions or financed directly by these institutions. This leads to under-reporting on the part of the University of Toronto.

At Memorial most of the funding is reported since there is little funding which is not made directly to Memorial faculty.

Another limitation in the study is the organizational differences between schools. At Memorial, the Department of Biochemistry is not part of the Faculty of Medicine, yet its faculty is involved in research funded by the Medical Research Council and is certainly

health orientated. The unit of analysis for this thesis is the Faculty of Medicine.

6.4 ORGANIZATIONAL:

Research can range from reflective inquiry to a specific contract to study a particular problem.[2] Simple reflective inquiry might not need specific funding if it is done by a faculty member without cost. A contract, if it requires time and materials, will require funding.

The success with which these funds are obtained is in part due to the organizational influences of the school. It is true that grants are judged on the basis of applications usually by individual faculty. However, if the school does not emphasize research and the needs for funding the granting agencies are not as likely to be aware of the potential which exists for research and the particular financial picture of the applying institution.

The funding agencies also tailor their grants to specific disease entities, such as the Heart Foundation, or National Health and Welfare. The school must be aware of the particular climate for research and be able to direct the effort in the right direction and in the correct manner. The foregoing makes the assumption that research is a proper and necessary activity for the school. While a detailed analysis of this subject is beyond the scope of this thesis, it is addressed briefly in section 6.5.

6.4.1 University:

6.4.1.1 Senate:

One of the terms of reference of the Senate Committee on Research is to prepare a statement of policy on research.[3] No such statement is available. The author was a member of this committee until recently (as graduate student representative); however, the committee did not meet during the twelve months of the author's membership. In fact, from discussions with other members of the University community, this committee has not met in the past two years and had met only infrequently prior to this.

It would seem then that the Senate, the main academic body in the University, either is not interested in research or assumes that deliberations re: research are not necessary. Certainly, this body is not providing leadership. Perhaps it is unreasonable to expect the Senate to be exploring the subject of research when there are major faculties on campus, which it might be assumed, could develop their own policies. Another explanation might be that it assumes that the Office of Research is taking care of this function. The Senate appears to have no positive influence on funding of Health Sciences Research. The lack of direction might be construed as having a negative import.

6.4.1.2 Office of Research:

The Office of Research has a number of specific functions including assisting the Senate Committee on research in the preparation of a research policy.[4] If this committee is not

active, one can not blame the Office of Research, since the committee reports to the Senate as a whole and not to the Office of Research.

Another function of the Office of Research is to represent the University to National bodies. In discussions with the Director of the Office of Research, it was recognized that this role was one of procedure and information. The Office of Research processes grant applications, ensures that they reflect any University requirements and doesn't unknowingly commit the University to any obligations.

The Office receives notices for grant offers from agencies and distributes them to appropriate University offices.

In addition, it has started to collate information on expenditures. It also produces the Research Directory and Research Inventory referred to in earlier sections.

These functions are informational and co-ordinative. There is a popular conception in certain faculty quarters that the Office of Research should be directing research.

There is, however, no specific mandate given to the Office of Research which suggests this. By collecting, analysing and presenting data, the Office could influence the direction of research, at least as much as the Faculty would wish to use the

information. However, the Office has not had the resources to compile and produce management-type statistics. With a recent addition of an Assistant Director, this might be possible. Certainly it will provide the resources to assist faculties with appropriate analysis. There is no doubt that this is one area of administration that needs improvement if it is to assist in creating an awareness of the need for increased funding.

6.4.2. Faculty of Medicine:

The Associate Deans in the faculty have responsibility for their respective divisions. As the figure heads, they are in a position to influence the research activity of their faculty members. They can encourage faculty to apply for grants, assist them in finding available and appropriate funding agencies, ensure appropriate dollar amounts are asked for, and assist in the presentation of the requests to these agencies.

Their role also is to ensure that agencies are aware of the faculty and its capacity and capability for research.

As to how effective they have been, it is difficult to judge. In discussions with them and their faculty, the feeling is that given the time constraint (they also have teaching, research and service commitments) they are performing well.

6.4.2.1 Advisory Committee on Research and Development (A.C.R.D.):

The activities of the A.C.R.D. have influence on funding in that

they advise the Dean on the awarding of funds trusted to it. However, this amounted to only some $40,000.00 in 1979-80.[5] By advising to fund or not (assuming the Dean accepts its advice and it appears he does) it can influence the individual to seek outside funds either to supplement the grant or to fund the project if it is not approved.

A large share of these funds are used for guest lecturers and to assist graduate students. The amount of research stimulus this fund provides is very limited.

There is another area where this committee might have had an important influence on the long term course of funding. In its deliberations in 1979 and 1980, it came to the conclusion that the position of an Assistant Dean for research be created within the Faculty of Medicine. This was recommended to the Dean on the basis of

a) need to encourage and co-ordinate research with the faculty
b) its potential benefit in securing funding.[6]

This recommendation has been reviewed by the Administration of the faculty and the University, and a position is being created.

This individual should be able to assist faculty with their specific funding problems. He can provide the necessary stimulus for research and help to acquire funding from outside agencies. He should also be able to ensure that appropriate statistics are gathered and kept up to date.

6.4.2.2 Research Groups:

The introduction of research groups is an indication to outside agencies that the Faculty of Medicine is making a constant effort to become involved in a definite way in specific disciplines or areas. This is a common practice in other Medical Schools.

The lack of group grants to date is perhaps indicative of the need for this development. In discussions with officials from M.R.C. and other agencies they suggest that this approach is highly recommended.

6.4.3. Institutional Objectives:

There have been quite a number of suggested areas of involvement of the Faculty of Medicine. Section 3.3 enumerates what the Dean of Medicine feels are important areas of research. This can be interpretated as a refinement of the research objective of the school.

The creation of the Northern Medicine Group is a positive policy step on the part of the school. The mere outlining of areas of research will not ensure funding. Filling faculty posts in these areas with faculty who have a commitment to and a history of successful funding in these areas probably will.

A well-orchestrated approach to creating an awareness of and the need for funding for these projects will ensure their viability for the future.

6.4.4 Space:

The influence of space on funding is an indirect effect. When recruiting new faculty one of the more important concerns of prospective candidates is space for research. If appropriate space is not available then these candidates are reluctant to proceed to direct negotiations on terms of appointment. Indeed other schools have used the argument of availability of space and funding to lure potential candidates away from Memorial.

Certainly at this time the space situation is acute. If there is not space made available for research, then the school will lose prospective researchers who in the long run would bring increased research funding.

6.4.5 Size of the Faculty of Medicine:

As the size of the faculty has grown over the years since establishment in 1967, so has the research activity.

The important fact to be observed here, however, is the relative size of the school. We saw in Table 3.8, Page 24 that the school has one of the highest student-faculty ratios of the 16 Medical Schools in Canada. Thus, there is a relatively small number of faculty to teach a large number of students and at the same time be available to seek out research funds. If the number of faculty were to be increased to the average of the schools in Canada (student-faculty ratio of 1:25), then this increased faculty in 1977-78 would have brought in (assuming the 1977-78

ratios of funding and grant in use values) an extra $500,000.00 approximately, excluding any effect of reduced non-research activities. This in turn might have increased the amount of money each research might have been able to attract.

Another problem for clinical faculty is the heavy demands for patient care. This fact was emphasized in the review by the A.C.M.A.. The trends in per capita research dollars is reviewed in a later section.

The small size of the graduate student pool is another restraining influence on research funding. It is accepted by the research community that graduate students provide useful research assistance in addition to their learning. Without these the faculty have to become more specifically involved in the day-to-day activities and thus there is less time to devote to acquiring funds. If one has to hire technicians to do all the work, the effect is to use up a large component of the grant.

In addition, the standing of the researcher among his peers who might review his grant application is enhanced if he is seen to have a large graduate student care.

The lack of postdoctoral fellows (as compared to other schools also) reflects negatively on this school.

6.5 FINANCIAL:

The research effort of the Faculty of Medicine is dependent to a large extent on the amount of monies available for staff, equipment and supplies. Being a relatively small school, each dollar is important. Therefore it is important to ensure that as accurate a framework as possible is in place to document and analyse the amounts, trends, etc. in funding.

6.5.1 The Size of the Research Industry:

The Health Research Industry is largely centered in the universities. More specifically the bulk of the research is carried out in the sixteen Medical Schools - 84.14%.

From Table 4.3, Page 30 we see that the Federal Government provides 28.2% of the funds for Health Sciences Research and Development performed in Canadian Universities in 1979-80.

From Table 4.5, Page 32 we see that the trend in Provincial sources has been downward - from 22.7% in 1968-69 to 7.9% in 1979-80. During this period the share of support from University sources has been increased from 14.1% to 47.4%. The federal share has also decreased while the remaining sources have not shifted dramatically.

6.5.2. Expenditures for Biomedical Research in Medical Schools:

The sixteen Medical Schools perform a significant amount of Health Sciences Research. From Table 4.6, Page 34 we see that the total

expenditure on Biomedical Research as reported by their schools was $107,348,000 in 1977-78 and $125,156,000 in 1978-79. When compared with total University Research and Development funding in Health Sciences in Canada in 1978-79 (Table 4.4, Page 31) the expenditures of the schools represent approximately 56% of the total.

Of the total expenditure reported by the sixteen schools in 1978-79, M.U.N.'s share was 1.3%. This was up from 1.2% in 1977-78. Thus, M.U.N. received the smallest amount in each year, ie: ranked 16th of 16.

If we compare Tables 4.6, Page 34 with Table 4.5, Page 32, however, the relative amounts from the various sources do not equate. This is perhaps due to differences in the terms of reference for the specific data bases. The main difference is in the amount listed from University sources. This is probably due to the fact that Table 4.6, Page 34 does not include expenditures for indirect costs whereas Table 4.5, Page 32 does.

6.5.3. Expenditures on Health Sciences Research by Faculty of Medicine, M.U.N.:

Table 4.10, Page 40 shows that the amount of Research funding has been increasing over the years. The direct expenditures have increased from $520,685 in 1971-72 to $1,736,691 in 1979-80 - an increase of 333% in 8 years. If we assume that the indirect expenditures have been at a constant 50% of direct expenditure,

then the total expenditure on Health Sciences Research in the Faculty of Medicine in 1979-80 was $2,605,037.

If we compare the amounts that were spent by M.U.N. with the totals of the sixteen Medical Schools (Tables 4.11 and 4.12, Pages 42 and 43) we see that the Federal share of support was approximately 8% higher for M.U.N. This is contrasted with the approximate 9% contribution from the Provincial Government for all as compared with 0 for M.U.N. In addition, other Provincial and local sources provided approximately 3% more funding for "all" than for M.U.N. M.U.N. did slightly better from national societies, associations, and companies.

6.5.4. Operating Budget:

While the operating grant given to the Faculty of Medicine by the Provincial Government each year does not have a specific research component, it does support a portion of the cost of research. This support is in the form of support for salaries of technicians, some of whom work on research projects, funding of overhead costs such as heat, light, library, certain secretarial help, etc. In addition, the Dean has the discretion to assist any project which he deems viable. Obviously, if the demands of the research people were large it could adversely affect the teaching component support.

The lack of funding from external sources for graduate fellowships, professorships, and other faculty researchers does,

however, have serious implications for the school: During the period 1974-75 to 1979-80 there were only 22 awards from external sources for scholarships, studentships, research professorships, etc. (see Table 4.20, Page 55). This is less than four per year on average. The average amount of these awards was $12,136. Hardly large enough to support a senior researcher.

If we compare the growth in research dollars from external sources with the growth in the operating grant (budget) for years 1971-72 to 1979-80, we see (from Tables 4.8 and 4.9, Pages 37 and 38) that the growth in research monies has fallen behind the growth in the operating budget - 333% vs. 394% respectively. This comparison ignores the import of the Health Resources Fund. However, since this tended to reduce the need for researchers to seek external funds as well as ease the load on the operating budget, this is all the more reason to decry the level of funding at present from external sources as being too low.

6.5.5. External Grant Amounts:

The trend in external funding of research is seen in Table 6.1, Page 87. If we compare 1971-72 with 1979-80, it has increased by 333% in 8 years of 41.6% a year, including increases in numbers of faculty, inflation, etc. During this period, the number of faculty increased by 211% or 26.4% a year.

Thus, on the surface it appears that there has been a steady increase in external monies for research. However, if we

TABLE 6.1

AVERAGE GRANT PER FULL-TIME FACULTY MEMBER

YEAR	RESEARCH GRANT MONIES	# OF FULL-TIME FACULTY	AVERAGE GRANT PER FULL-TIME FACULTY
1971-72	520,685	60	8,768.00
1972-73	616,305	69	8,932.00
1973-74	779,214	82	9,502.00
1974-75	806,307	96	8,399.00
1975-76	924,164	85	10,873.00
1976-77	858,369	106	8,098.00
1977-78	1,125,369	106	10,617.00
1978-79	1,511,075	113	13,372.00
1979-80	1,736,691	127	13,675.00
0% increase from 1971-72 to 1979-80:			
	333%	211%	192%

SOURCE: Calculated from Tables 3.1 and 4.9.

compare these figures with the operating budget which should be a good indicator of the overall growth of the programs we see that it has actually fallen behind (see section 6.5.4.)

The significant fact is that in 1971-72 external research funds amounted to 25.69% of the operating budget whereas in 1979-80 it amounted to only 21.73% (see Fig. 4.1). The low contribution in certain of the intervening years was due to the influence of the Health Resources Fund.

When compared with other Medical Schools, in the year 1978-79 vs. 1977-78 M.U.N. improved its share by 0.3% of the total (1.0% in 1977-78 and 1.3% in 1978-79) (see Table 4.7, Page 35).

The low level of funding from Provincial and local sources is one factor which has perhaps been responsible for this position. In terms of non-Government support of research, M.U.N. moved from 16th position in 1978-79 to 14th in 1979-80 (see Table 4.21, Page 56). Note, however, the small number of scholarships, studentships, and fellowships for M.U.N.

6.5.6. Health Resources Fund:

The Health Resources Fund had a large and important impact on Health Sciences Research at M.U.N. Through this Fund some $1,690,475 was spent on research equipment during the years 1973-74 to 1978-79 (see Table 4.13, Page 45).

During these years the amount of funding for research from other external sources was greatly reduced. This was in part due to the perceived availability of ready monies for equipment. Thus, there was not the need or incentive to apply for external monies (as viewed by the individual researcher).

In addition, the Medical Research Council and National Health and Welfare were aware of the Health Resources Fund and had informed the school that large equipment grants would not be entertained during this period.

While the availability of certain funds was slightly curtailed, there is perhaps reason to suggest that researchers became too dependent on it and this has created a problem now that this fund is no longer available.

Another factor to be considered is that while the fund was instrumental in helping to equip the laboratories. Most of the equipment is now 6 years old. With the passage of time and the heavy usage it has had, much of this equipment is either obsolescent technologically or in need of significant maintenance.

Funds will be needed to address this problem in the near future.

6.5.7. Internal Sources:

The amount of money available from internal sources for research (Table 4.10, Page 40) is so small that it has not any appreciable

influence on the overall picture. There has been minimal support for specific projects. A major portion of these funds were used to pay for visiting speakers and support of graduate students.[8]

6.5.8. Grant Sources, Numbers and Types:

The number of sources from which external research funds were received has decreased over the period 1974-75 to 1978-79 (see Table 4.14, Page 48) from 24 to 23. This may signify a lack of initiative on the part of the school or the individual researcher to seek external funding. During this period, also, the number of external grants had decreased from 61 to 57. This rules out any possibility that more grants were received from fewer sources.

From Table 4.15, Page 49 we see that the Federal Government continued to be the main source (in terms of numbers) of grants. Only two research grants were received from the Provincial Government in this period.

Table 4.10, Page 40 indicates that the number of grants in use however, has increased. When compared with Table 4.15, Page 49 we note that grants in use include grants that were awarded for more than one year or monies unspent from previous years.

Table 4.20, Page 55 indicates that while there has been continued support in terms of term, continuing new and one-year grants in

the period 1974-75 to 1979-80 the amount of money for major equipment, maintenance, group, program and development grants has been virtually non-existant. Only in 1978-79 was there a program grant and development grants (3 per year) were awarded only in 1978-79 and 1979-80.

Note also the shortage of manpower awards. This failure to attract salary support puts increased burden on the operating budget of the school.

The Canadian Directory of Foundations and Granting Agencies in 1979 listed 103 foundations which either have a specific mandate to fund projects in health or are sufficiently general in their descriptions of their mandate as to permit such projects.[19] The fact is that the school was only funded by 22% or 21%. With a reasonable amount of effort, one might expect this situation to improve.

In terms of foreign sources, the Directory of Research Grants for 1979 lists 280 programs in Health Research, the majority of which are available to Canadians, ie: have no restriction on the country of the applicant.[10] The Medical School is funded by only two of the 280.

A great deal of work needs to be done in the area of seeking funding from these agencies. Dr. P. Leslie calculated in Canadian Universities, 1980 and Beyond that only 0.8% of M.U.N.'s

(total university) income from gifts, non-Government grants and investment income was given for research. The corresponding figures for Toronto, Dalhousie, Queen's, McGill (each with a Medical School) was in the range of 10% to 15%. If the University income from these sources for research is low then the general climate for research is adversely affected.

6.5.9. Grants vs. Faculty:

Table 6.2 portrays the divisional relationship between the numbers of full-time faculty and the numbers of full-time faculty funded from external grants. The ratios in each division have not changed dramatically with the exception of Community Medicine which was low in 1975-76 and 1976-77. The real significance of this data is that it shows that the clinical division lags behind the other divisions in terms of faculty funded from external research as compared to numbers of faculty (25% in 1979-80).

The other two divisions have a funding ratio of 59% for Basic Sciences and 64% for Community Medicine.

If we look at Table 6.3 we see that in comparing 1980 with 1977 there has been an improvement in

a) the ratio of numbers of grants to the number of full-time faculty
b) the ratios of numbers of grants to the numbers of full-time faculty engaged in research

TABLE 6.2

RATIOS OF NUMBER OF FACULTY FUNDED FROM EXTRAMURAL GRANTS BY FACULTY DIVISION FOR YEARS 1974-75 TO 1978-79

YEAR	# FULL-TIME FACULTY			FULL-TIME FACULTY FUNDED FROM EXTERNAL GRANTS			RATIOS OF		
	BS (A)	CL (B)	CM (C)	BS (D)	CL (E)	CM (F)	(D)-(A)	(E)-(B)	(F)-(C)
1974-75	27	60	9	16	14	6	0.59	0.23	0.67
1975-76	22	57	6	16	12	2	0.73	0.23	0.33
1976-77	31	65	10	14	12	3	0.45	0.18	0.30
1977-78	31	64	11	18	12	5	0.58	0.19	0.45
1978-79	34	68	11	20	17	7	0.59	0.25	0.64

BS - Basic Science Division

CL - Clinical Science Division

CM - Community Medicine and Behavioral Sciences Division

SOURCE: Cancluated from Tables 3.1 and 5.6

TABLE 6.3

COMPARISON OF RESEARCH FACULTY/GRANT AND FACULTY/GRANT RATIOS FOR YEARS 1977 AND 1980

	1977	1980
1. Number of grants in use	58	82
2. Number of full-time faculty	106	127
3. Number of full-time faculty engaged in research	52 (1,3)	64 (2,8)
4. Number of full-time faculty engaged in research and funded from a grant	34 (3)	41 (2,3)
5. Ratio of 1 to 2	0.55	0.64
6. Ratio of 1 to 3	1.12	1.28
7. Ratio of 1 to 4	1.71	2.00
8. Ratio of 3 to 2	0.49	0.50
9. Ratio of 4 to 2	0.32	0.32
10. Ratio of 4 to 3	0.65	0.64

NOTES: 1) does not include three faculty from Biochemistry department with cross-appointment to Faculty of Medicine.

2) does not include five faculty from other faculties with cross-appointment to Faculty of Medicine

3) does not include one part-time faculty member engaged in research and funded from grant.

SOURCE: Calculated from Tables 3.1, 4.10, and 5.6

c) the ratio of numbers of grants to the numbers of full-time faculty engaged in research and funded from a grant to the numbers of grants.

Table 6.4 shows that since 1971-72 the history of growth in faculty to grants in use has been checkered. Also to be noted that on average the number of grants to numbers of full-time faculty is approximately 60% whereas the numbers of full-time faculty funded from grants is approximately 50%.

As to whether this is bad or good we do not have any yardstick to compare. However, the possibility does exist to increase the amount of funds by having more people acquire research grants - if that is possible.

6.5.10. Expenditure Patterns:

A number of grants for years 1968-69 to 1977-78 were reviewed to ascertain the expenditure patterns. How were the monies spent? This information is presented in Table 6.5. The numbers conform to the general pattern as expressed by discussions with other Medical Schools. However, specific data was not available. This is an area for further research.

6.6 OTHER:

From the point of view of the other factors enumerated in Chapter 5, the influence on funding is varied.

TABLE 6.4

RATIO OF GRANTS IN USE TO
FULL-TIME FACULTY
FOR YEARS 1971-72 TO 1979-80

YEAR	A NUMBER OF FULL-TIME FACULTY	B NUMBER OF GRANTS IN USE	RATIO OF B TO A
1971-72	60	24	0.40
1972-73	69	41	0.59
1973-74	82	49	0.60
1974-75	96	43	0.45
1975-76	85	57	0.65
1976-77	106	58	0.55
1977-78	106	73	0.69
1978-79	113	81	0.71
1979-80	127	82	0.64

SOURCE: Calculated from Tables 3.1 and 4.10

TABLE 6.5

SURVEY OF A SAMPLE OF GRANT EXPENDITURES FOR YEARS 1968

YEAR	# OF GRANTS	SALARIES WAGES	STUDENT ASSISTANTS	TRANS & COMM.	INFOR-MATION	PROFESSIONAL & SPECIAL SERVICES	RENTALS
68-69	1	24,828.36 66%		486.09 1%		160.60 4%	
69-70	6	116,469.76 57%	3,932.05 2%	4,411.32 2%			
70-71	11	114,908.26 51%	18,650.00 8%	7,990.21 4%		8,150.00 4%	3,422.29 2%
71-72	17	175,168.07 52%	1,845.69 1%	5,962.52 2%	165.65 0%	11,390.57 3%	4,216.90 1%
72-73	22	197,401.37 63%	20,005.58 6%	11,199.32 4%	22.60 0	26,675.16 9%	2,063.58 1%
73-74	32	323,839.09 65%	6,578.69 1%	12,364.24 3%	2,220.00 0	43,166.96 9%	3,272.00 1%
74-75	23	299,034.86 71%	1,357.05 0	12,339.05 3%	56.84 0	60,577.89 14%	5,742.76 1%
75-76	32	381,308.69 62%	21,504.02 4%	24,560.02 4%	14.40 0	85,987.20 14%	97.91 0
76-77	21	195,727.63 63%	23,876.18 8%	14,327.27 5%	923.11 0	901.98 0	168.48 0
77-78	31	254,453.99 56%	33,543.02 7%	18,671.17 4%	2,444.32 1%	11,949.29 3%	59.72 0

SOURCE: Memorial University Faculty of Medicine, Finance Office, Grant Statements for Years 1968-69

ES FOR YEARS 1968-69 TO 1977-78

RENTALS	PURCHASED REPAIR & UPKEEP	UTILITIES MATERIAL SUPPLIES	ACQ.-LAND BLDG. FIXED EQUIPMENT	ACQ.—MACH. FURNITURE EQUIPMENT	GRANTS RESEARCH SUPPORT	TOTALS
	69.26 2%	11,792.05 31%	7.70	416.72 1%		37,760.78
		69,044.12 34%		8,911.29 4%		202,768.54
3,422.29 2%		35,786.09 16%		34,809.87 16%		223,655.72
4,216.90 1%	174.66 0	25,050.91 8%		106,924.44 32%	4800.00 1%	335,903.29
2,063.58 1%	294.06 0	28,507.41 9%		24,970.84 8%	3200.00 1%	314,339.92
3,272.00 1%	708.54 0	51,142.57 10%		56,089.09 11%		501,361.18
5,742.76 1%		31,542.69 8%		9,669.30 2%	2400.00	422,552.94
97.91 0	4,996.18 1%	60,411.47 10%		29,122.46 5%	5405.43 1%	613,997.12
168.48 0	5,133.92 2%	54,122.00 2%	5346.19 2%	12,388.65 4%	40.34 0	312,945.75
59.72 0	1,858.44 0	72,502.12 16%	2159.41 1%	54,626.75 12%		452,268.33

or Years 1968-69 to 1977-78.

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6.6.1. Standing of the School:

The standing of the school is not in question. However, the reputation for excellence in certain areas should be the goal. With this might come more research funding. One can only say there is no negative impact.

6.6.2. Publications:

Publications are an indication of research activity and the trend is stable. There has been no improvement but we cannot say whether the present level is good or bad since we do not know the rates for other schools.

6.6.3. Year Established:

The Faculty of Medicine at M.U.N. is a new school and as such it can expect to have to work to break into the circle of older established schools and carve up a piece of the pie. This fact should be considered and an effort made to account for this.

6.6.4. Provincial Sales Tax:

One factor which has had an adverse effect on this school relative to others is the provincial sales tax. The present level is 11% and this has to be paid on all purchases of supplies and equipment. The effect is to substantially reduce the gross amount of the grant. This problem should be addressed by the appropriate authorities.

6.6.5. Success Rate on Applications:

The success rate on applications suggests that in the Basic Science division for N.R.C. and National Health and Welfare the success rate is 50% and this represents a major share of the support. The success on the others is checkered. This should be investigated further to see why and what are the trends.

6.6.6. Areas of Research Activity:

The areas of research activity have until recently not attracted Provincial support. However, by the same token they have attracted funding to the degree noted from other agencies. If research in areas of specific Provincial problems was increased it is probable that the funding would increase. From conversations with the Dean and the Associate Deans an attempt is being made along these lines. Establishment of research institutes might make a difference here.

6.7 STUDENTS AND RESEARCH:

There are a number of programs which have attempted to attract the Undergraduate students to consider research. These include summer research scholarships, term projects and the like. In addition, each year there is a Student Research Forum at which students (undergraduate as well as graduate and post-graduate) are encouraged to present papers outlining their research. The winner of this competition is assured a trip to the National Student Research Forum held each year in the United States. However, it is too easy to judge whether this will have the

desired long-term effect - doctors who are interested in research as a career. However, it is hoped that they (doctors) will have a greater awareness of the relationship between research and patient care.

6.8 OPERATING BUDGET vs. RESEARCH GRANTS:

The school has depended on the operating budget for salaries of faculty and researchers. The fact that this money has been forthcoming is in the long run self-defeating. It lulls clinical chairmen, etc., into the false impression that research funds are needed only for equipment and supplies. If a viable research program is to be undertaken then outside research monies must be obtained for these people. The school can only hope to obtain money from Government (operating grant) for the core faculty. In addition, researchers must attract outside funds for technicians. They cannot rely in the future on the operating budget.

This is one area where the school must place greater emphasis.

CHAPTER 7 - CONCLUSIONS

The conclusions one can draw from the foregoing research and analyses are:

a) There has been a steady increase in the amount of monies coming into the school for research.

b) The school should focus more closely on the reasons for the present level of funding.

c) An individual with the time and skills should be given the responsibility to assist the faculty to increase their funding.

d) More clinical faculty need to be appointed to enable a greater emphasis on clinical research.

e) The school should articulate the need for more local and Provincial support for research.

f) Greater emphasis needs to be placed on acquiring salary support for full-time researchers, graduate students, post-doctoral fellows, etc.

To quote a science writer, David Wood, writing in the C.M.A. Journal in August, 1979:

"But its not only a question of reassuring potential researchers that funding can be found; many are confused about the application process or about which of the several agencies they should approach. Some may be deterred by a notion that the scramble for financing is fiercely competitive; they have to be taught where to begin",

and the former President of the Canadian Medical Association,

Dr. L. Wilson, in the C.M.A. Journal, August, 1978:

"Show me a University Science department without an active program of productive research, and you show me a department incapable of first class teaching. Show me a Clinical department in a Medical School that lacks an active program of successful investigation, and you show me a department handicapped in its teaching function".[2]

The message is obvious. Research and teaching go hand in hand. The school must ensure that every effort is undertaken to foster research to compliment its teaching programs.

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APPENDIX A

GRANTING AGENCIES

GRANTING AGENCIES

Medical Research Council[1]

The Medical Research Council reports to the Minister of National Health and Welfare, is a creation of the Parliament of Canada (and has existed in its present form since 1969).

The function of the council is "to promote, assist and undertake basic, applied and clinical research in Canada in the health sciences, other than public health research".

Its activities are divided into three broad programs:

a) Grants programs,

b) Awards programs,

c) Special programs.

The Grants program provides monies for a) small items of equipment, b) supplies, and c) salaries of assistants for health sciences research proposed and carried out by researchers in universities and affiliated institutions.

The awards program includes:

a) Associateships

b) Scholarships

c) Centennial fellowships

d) Fellowships

e) Studentships

f) Visiting Scientists

g) Visiting Professorships

h) Research Professorships

i) Summer undergraduate research awards

The special program includes:

a) General Research Grants

b) Development Grants

c) Group Grants

d) Program Grants

e) Subject Research Development Grants

f) Special Projects.

Investigators must provide a comprehensive application and their applications are judged by peer review. They are then funded subject to peer review and availability of funds.

All applications are processed by committees and each member of the Committee reviews the full application including support documentation. There is no research performed intramurally.

National Health and Welfare[2]

The Department of National Health and Welfare, unlike M.R.C., provides funds for both intramural and extramural research.

It funds intramural research in such areas as:

a) Health services

b) Pharmacology

3) Nutrition

4) Epidemiology

5) Clinical laboratory practice

6) Smoking and health.

Extramurally, the Department of Health and Welfare funds most of the research through the National Health Research and Development program. It will finance health care research which is generally outside the realm of M.R.C.

It funds, for example, research on:

1) Organization of health systems,

2) Personal life styles and impact on health

3) Personal, community and occupational environments.

One need not have a university affiliation to receive funds from N.H.R.D.P.

The bulk of Federal spending on extramural research is done through M.R.C.

In addition to the N.H.R.D.P. grants, small amounts of money are spent on research by agencies such as fitness and amateur sport and Department of Veterans Affairs.

Health Resources Fund[3]

The Health Resources Fund was established in 1966 by the Parliament of Canada. Its purpose was to:

1) assist in the construction and equipping of health training

and research facilities.

2) provide studies into all aspects of the supply of health manpower,

3) provide technical and professional consultation services to provinces in the area of health manpower.

The program has now been discontinued. However, 50% of the cost of construction and equipping of the Health Sciences Centre came from this fund.

Provincial Research Councils/Funds

Certain provinces provide funds for health research through either a special fund or a research council.

Quebec has its "Counseil de la Recherche en Santé du Québec" which gets its financing from the "Ministère des Affaires Sociales"..

Ontario has four "statutory foundations" for research related to drug addiction, cancer, heart disease, and mental health. The foundations continue to derive their funds largely from the Provincial Government.

Saskatchewan has a special health research fund set aside from Provincial treasury funds. Alberta has a special Heritage fund for health research.

Memorial University of Newfoundland and Dalhousie are the only Medical Schools in Canada which do not have access to either a Provincial research council or special Provincial health research funds.

Voluntary Health Agencies

Research is also supported by Voluntary Health agencies such as the Arthritis Society, Heart Foundation and Cancer Society, on the national level.

In addition, there are Provincially based agencies paralleling these in these areas, as well as in other special areas. The main characteristic of these agencies is that they are designed to support research on a specific disease entity.

Private Foundations

In addition, there are a number of private foundations which support health research. Examples of these are the Donner Foundation, The Richard and Jean Ivey Fund, and the Garfield Weston Foundation.

Other

Commercial firms will also support health research if the project is in the area of their commercial interest.

Certain foreign agencies, firms, foundations, etc., will also fund health research in Canada.