NLM Medical Library Resource Improvement Grant Program:
An Evaluation

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ABSTRACT

The Extramural Programs, NLM, undertook a staff study to evaluate the Medical Library Resource Improvement Grant Program in order to determine impact on hospital library development and to assess factors significant to regional medical library (RML) network development. Initiated in fiscal year 1971, the improvement grant program provides one-year, one-time grant awards of a maximum of $3,000 to assist in establishing a basic collection of books, journals, and other health science information resources for community hospitals and comparable health facilities. Applicants who received grant awards were compared to applicants who did not receive awards and to nonapplicants, using nine dependent variables, four independent variables, and responses to an RML questionnaire. Results show that the applicants who received awards outperformed the other groups, and that the improvement grant program has been successful in stimulating library development.

As a result of this study, the improvement grant program will be modified to support consortium arrangements as well as individual institutions, and to extend the period of grant support to two years. Future grant support will be a maximum of $4,000 in the first year, and up to $3,000 with a provision of $1,000 in matching funds from the grantee in the second year.

THE Medical Library Resource Improvement Grant Program was initiated in fiscal year 1971 following the passage of the Medical Library Assistance Extension Act of 1970 (P. L. 91-212). The goal of the program is to strengthen the regional medical library (RML) network through stimulation of library development at the network's foundation level, the "basic unit" represented by community hospitals and comparable institutions. One-year, one-time grant awards of a maximum of $3,000 were made to provide assistance in establishing a basic collection of books, journals, and other health science information resources. The recipient guaranteed a half-time individual to be responsible for day-to-day operation of the library, and agreed to maintain the facility following termination of the grant.

In 1971 there were an estimated 7,000 hospitals in the country, only about 1,700 of which had libraries containing more than 500 volumes and 25 journal titles [1]. The target group was the 5,300 hospitals lacking a basic information resource. There were doubts, however, whether $3,000 was adequate to produce the desired results. At the same time, the target group is one traditionally neglected, and proponents of the program were convinced that even this small effort would stimulate growth and lead to better information transfer at a crucial level of health care delivery—the community hospital. These were among the reasons for evaluating the effectiveness of the program at the earliest opportunity.

In 1974 the Extramural Programs, NLM, undertook a staff study to evaluate the improvement grant program. Study objectives were (1) to evaluate the impact of the program on hospital library development, and (2) to assess factors significant to RML network development for the purpose of modifying the support mechanism if appropriate. Specific requirements of the study included: (1) an assessment of achievements in terms of program goals; (2) the collection of quan-

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tifiable data as far as possible; and (3) an analysis that would indicate appropriate program modifications and revisions.

The specific objectives of the improvement grant program are to provide timely access to the biomedical literature, promote local resource sharing, encourage utilization of biomedical information, and support the educational functions of a hospital for primary-care physicians as well as ancillary health care workers. The ability to assess the impact of the acquisition of informational materials on the delivery of health care was recognized as beyond the scope of this modest study. The issue of program impact, therefore, was limited to an examination of the "seeding" effect these small awards had in stimulating development. Development, as a measure, has two levels: library growth within the institution itself in terms of budget, personnel, and collection size; and the institution's use of the RML network and participation in regional activities.

The Study Group

The basic study group, successful applicants (those who received a grant award), were compared to two matched groups—unsuccessful applicants (those who applied but did not receive an award), and nonapplicants—according to a number of independent variables such as bed capacity, personnel served, educational programs, etc. An effort to identify the variables associated consistently and strongly with the successful applicant group is considered to be important and justifiable. However, the potential experimental danger in assuming a strict cause-and-effect relationship between the factors under study, in this case the grant award and the resulting change, is recognized.

Awards were made to approximately 312 institutions between 1971 and May of 1974. The study population was limited to institutions whose awards terminated by December 1972, thus allowing from eighteen to twenty-four months for growth beyond the initial grant period. The resulting group of successful applicants was then stratified by bed capacity and within that by rural or urban location as well as by RML region. A matching group from the list of applicants who did not receive awards was then selected. The third group, nonapplicants, was randomly selected from the *Directory of Health Sciences Libraries* [2]. Only hospitals appearing in both the 1969 and 1974 editions and matching the profile of the successful applicants were selected. In all cases, the total group from which each study group was selected was relatively small.

TABLE 1

Sources of Institutional Data

Study group*	Source of data	RML data
Successful (S) (received award)	Original grant data; current fiscal year data on grant forms	Questionnaire to RML on each institution
Unsuccessful (U) (reviewed)		
Nonapplicants (NA)	*Directory of Health Sciences Libraries,* 1969 and 1973	

*Applicants in fiscal year 1971, and through December 1972.

Data Collection

Objective data on the institution's education programs, its library budget, staffing, and makeup, submitted at the time of application, are retrievable on-line through the NLM Extramural Programs grant data base. In order to gather current information on fiscal year 1974, the same improvement grant application forms were sent to the successful and unsuccessful groups with a cover letter explaining the purpose of the data gathering.

A process to capture RML expertise in some consistent and usable fashion for the purposes of this study was sought. Nine of the eleven RML assistant directors were asked to reply to a one-page questionnaire concerning each study group hospital in their region. The purpose of the study was explained, the need for their input was discussed, and all agreed to participate. Region IV (NLM) and Region X (Pacific Northwest) were not included because of the small number of applicants from these areas.

The questionnaire attempted to identify some of the ways in which the study group interacted with the RML network, and was only partially quantitative: interlibrary loan requests, consultation services, frequency of use of RML services, etc. Data were also sought from the RML staff to assess impact and provide information on possible future program changes. The study group and data returns are displayed in Tables 1 and 2.

Data Analysis

Only institutions represented by both "before" and "after" data were included in the computa-

TABLE 2
DATA RETURNS

Study group	Applicants, Jan. 1971 to Dec. 1972	Number selected	Forms returned	% applicant response	% RML response
S	91	82	69	84	100
U	185	65	44	67	99
NA	–	42	–	–	80

tions. Because the changes and whole numbers from the beginning to the end of the experimental period would be small, and the value of the whole numbers would be relative to the initial value, a percentage change value seemed the most meaningful calculation. Percentages were calculated using the following formula:

$$\frac{A - B}{B} = \% \text{ of change}$$

where A is 1974 data and B is "before" award data [3].

Although the majority of tables and data displays compare the three groups by mean percentage change scores, the *actual value* changes were also computed and used in some instances. When an institution showed no resources to begin with, but reported resources at the end of the experimental period, the percentage could not be computed. By inserting an artificial value such as 1 in the "before" value, where a zero existed a percentage change could be calculated, but would seriously skew the results. The decision was made to exclude these subjects from the percentage change calculations; however, since this group is a sizable and particularly important segment of the study of population, its change rates needed to be included in the calculations. To accomplish this, an analysis of the *actual value* differences was also performed. These are used to amplify and correct the impressions of the mean percentage change calculations and are discussed in relation to those variables where they show some significance.

These study groups were compared to one another utilizing nine dependent variables and four independent variables. The dependent variables were:

1. Salary,
2. Book budget,
3. Total budget,
4. Number of full-time equivalents,
5. Number of professional librarians,
6. Number of nonprofessional librarians,
7. Total number of bound volumes,
8. Number of journal subscriptions,
9. Size of the total collection.

Salary information was not available for the randomly-selected nonapplicant group.

The independent variables were:

1. Bed capacity,
2. Rural or urban location,
3. Teaching programs available to professional students and to paraprofessional students,
4. Hospital staff, subdivided into staff positions, consultants, interns, residents, and registered nurses (RNs).

Full data displays for all variables are found in Tables 3 and 4 in terms of mean percentage changes. Table 5 compares mean actual value changes to mean percentage changes for the dependent variables.

RESULTS

There is clear and ample evidence that the successful applicants outperformed both the unsuccessful and the nonapplicant groups (hereafter referred to as S, U, and NA). The following is a summary of the differences (see Table 5).

Comparison by groups: mean actual value differences:

S Budgets

1. $4,785 gain in salaries compared to U gain of $2,404;
2. $7,765 gain in total annual operating expenses (AOE) compared to U-group gain of $4,093.

S Personnel

1. 0.05 gain in full-time equivalents (FTEs), compared to U loss of −0.30 and NA loss of −1.96;
2. 0.12 gain in professional librarians, compared to U loss of −0.19 and NA loss of −1.87.

TABLE 3

MEAN PERCENTAGE CHANGES—SUCCESSFUL APPLICANTS

	N	Salary	N	Book budget	N	Total budget	N	FTEs	N	Prof. librarians	N	Nonprof. librarians	N	Total bound vol.	N	No. of subscrip.	N	Total collection
Bed capacity <200	11	53.98	14	259.4	15	682.6	18	33.5	8	-20.0	13	58.5	18	426.4	17	142.4	19	515.1
Bed capacity 201–400	15	338.4	15	272.9	16	247.5	19	11.6	8	116.7	14	-32.5	18	243.0	19	139.6	20	683.5
Bed capacity 401+	11	110.2	11	233.6	11	120.4	14	9.5	6	-27.8	12	-26.1	13	65.6	14	55.7	14	548.2
Schools	23	141.9	25	184.8	26	280.2	31	15.9	15	41.7	21	-18.6	31	292.8	30	79.5	32	425.4
No schools	22	210.2	23	330.9	24	364.7	29	24.1	11	-27.3	24	-5.8	26	134.1	28	134.8	29	539.0
Students <100	32	173.7	35	283.1	36	370.7	45	9.7	18	26.7	36	-6.7	42	173.7	43	283.1	45	370.7
Students 100+	13	156	13	187.7	14	208.5	15	47.2	8	4.4	9	13.1	15	129.6	15	61.5	16	546.9

MEAN PERCENTAGE CHANGES—UNSUCCESSFUL APPLICANTS

Bed capacity <200	9	57.9	14	258.9	14	392.1	13	-33.3	3	-100.0	11	38.8	12	787.2	12	34.9	13	459.8
Bed capacity 201–400	9	10.3	11	70.5	11	10.9	10	14.5	4	-37.5	9	43.8	12	81.6	12	17.1	12	75.2
Bed capacity 401+	7	68.3	7	88.7	7	69.8	7	-1.9	6	-25.0	5	-3.97	7	74.9	7	13.2	7	69.3
Schools	18	49.6	21	146.2	21	48.6	21	-14.1	11	-51.1	18	94.1	21	591.2	21	21.9	21	271.6
No schools	14	68.3	17	146.4	18	300.6	15	-7.4	7	-45.7	13	-34.3	17	88.4	17	19.2	18	187.0
Students <100	20	53.0	24	196.8	25	236.8	23	-8.4	9	-57.8	20	-7.0	24	403.2	24	27.5	25	245.7
Students 100+	12	59.1	14	56.1	14	36.9	13	-15.3	9	40.3	11	92.7	14	218.9	14	7.6	14	184.9

MEAN PERCENTAGE CHANGES—NONAPPLICANTS

Bed capacity <200							8	-65.2	5	-98.0	4	-85.8	8	49.0	8	135.5	8	46.5
Bed capacity 201–400							16	27.7	15	-52.8	6	103.0	16	48.3	16	64.3	16	45.8
Bed capacity 401+							9	95.9	8	-56.3	3	166.7	9	26.9	10	107.0	10	407.5
Schools							30	13.0	25	-69.8	13	69.2	30	50.0	31	75.4	31	136.0
No schools							5	-10.0	5	-100.0	1	-100.0	7	22.4	7	91.5	7	25.3
Students <100							35	17.5	30	-63.8	14	48.3	37	51.0	38	85.7	38	148.2

TABLE 4

MEAN PERCENTAGE CHANGES—SUCCESSFUL APPLICANTS

	N	Salary	N	Book budget	N	Total budget	N	FTEs	N	Prof. librarians	N	Nonprof. librarians	N	Total bound vol.	N	No. of subscrip.	N	Total collection
Rural location	13	111.2	17	303.3	18	682.1	22	32.4	9	−33.3	16	28.8	21	301.1	22	39.9	23	731.0
Urban location	32	191.9	31	232.0	32	124.6	38	11.4	17	47.5	29	−28.2	36	196.5	36	89.3	38	389.5
Univ. affiliation	8	528.3	7	363.7	8	275.7	8	52.3	4	−8.3	4	−37.1	7	177.1	8	55.8	8	283.3
No affiliation	29	90.8	33	209.7	34	379.4	43	10.3	18	34.4	36	1.1	43	273.1	43	123.7	46	629.2
M.D.'s <30	21	97.8	22	253.5	23	347.2	27	46.9	9	−5.9	17	22.4	23	116.5	23	75.2	24	215.1
M.D.'s 30+	24	230.6	26	260.4	27	306.6	33	−3.7	16	41.3	27	−23.6	33	313.0	34	125.6	36	724.0
Consultant M.D.'s <15	25	129.6	28	341.8	29	469.3	36	25.7	14	14.4	25	21.2	31	321.8	32	114.3	34	632.9
Consultant M.D.'s 15+	20	217.3	20	138.9	21	114.5	24	9.1	11	2.4	19	41.5	25	121.4	25	93.6	26	373.4
RNs 1–99	25	83.0	28	243.4	29	407.4	35	24.7	13	55.6	26	6.9	32	216.6	32	105.7	33	269.0
RNs 100+	20	275.6	20	276.6	21	211.8	25	11.3	12	−9.7	18	−24.3	24	253.3	25	104.6	27	827.8
Interns	8	131.7	8	256.2	8	142.3	9	19.9	5	−22.0	6	−43.8	8	226.6	9	55.1	9	949.5
No interns	37	176.6	40	257.5	42	360.1	51	18.9	20	35.8	38	0.12	48	223.3	48	114.7	51	444.7
Residents	15	296.4	15	209.3	15	149.8	17	18.2	10	−26.0	11	−32.9	16	151.3	17	50.7	17	536.1
No residents	30	104.7	33	279.1	35	400.5	43	19.5	15	57.8	33	3.2	40	264.7	40	128.4	43	514.3
MEAN PERCENTAGE CHANGES—UNSUCCESSFUL APPLICANTS																		
Rural location	13	52.6	17	236.6	17	324.8	13	−46.0	6	−72.9	13	−27.9	14	179.6	15	24.8	15	265.0
Urban location	19	57.1	21	70.8	22	41.7	23	9.0	12	−37.1	18	69.1	24	426.1	23	17.1	24	198.0
Univ. affiliation	6	68.7	6	81.7	6	67.6	6	15.1	5	10.0	4	0.9	6	68.8	6	16.5	6	64.5
No affiliation	18	9.7	24	135.4	25	211.9	23	−6.4	8	−84.4	20	40.8	24	487.0	24	15.0	25	310.2
M.D.'s <30	19	58.3	21	200.3	22	259.8	18	−31.8	9	−64.7	18	−33.1	19	146.4	20	15.2	20	210.8
M.D.'s 30+	13	50.9	17	76.7	17	42.5	18	10.1	9	−33.3	13	113.6	19	524.1	18	25.7	19	237.5
Consultant M.D.'s <15	25	186.6	24	27.4	25	161.7	25	−14.1	13	−44.8	21	31.6	25	186.6	24	27.4	25	161.7
Consultant M.D.'s 15+	11	17.1	12	187.6	13	150.0	11	−3.6	5	60.0	10	21.7	13	621.2	14	7.6	14	334.7
RNs 1–99	22	58.2	28	162.9	29	203.1	24	−25.1	10	−63.3	22	30.2	26	450.5	27	27.5	27	286.5
RNs 100+	10	48.9	10	94.9	10	54.7	12	17.5	8	−31.3	9	24.1	12	85.5	11	2.3	12	82.9
Interns	9	35.3	8	217.9	9	102.9	8	3.9	3	33.3	7	12.9	9	74.9	9	74.7	9	74.3
No interns	23	63.1	30	125.5	30	183.7	28	−15.1	15	−65.5	24	32.9	29	416.1	29	3.2	30	268.7
Residents	14	94.8	14	121.8	14	89.6	15	12.7	10	−30.0	12	20.6	16	91.4	16	22.1	16	82.5
No residents	18	24.5	24	158.5	24	212.2	21	−27.8	8	−72.8	19	33.3	22	512.6	22	18.7	23	322.1

TABLE 5

COMPARISON OF MEAN ACTUAL VALUE AND MEAN PERCENTAGE CHANGES

	Successful				Unsuccessful				Nonapplicant			
	Mean actual value		Mean percentage change		Mean actual value		Mean percentage change		Mean actual value		Mean percentage change	
	N		N		N		N		N		N	
Salary	64	$4,785	45	168.6	40	$2,404	32	55.3	–	–	–	–
Book budget	64	$2,925	48	257.3	40	$2,341	38	144.9	–	–	–	–
Total budget	64	$7,765	50	325.3	40	$4,093	39	165.1	–	–	–	–
FTEs	64	0.05	60	19.1	40	-0.30	36	-10.9	38	-1.96	35	17.5
Prof. librarians	64	0.12	26	19.5	40	-0.19	18	-49.0	38	-1.87	30	-63.8
Nonprof. librarians	64	-1.96	45	-7.9	40	-1.87	31	28.4	38	-0.09	14	48.3
Total bound vol.	64	893.8	57	235.1	40	1,283.2	38	335.3	38	342.4	37	51.0
No. subscriptions	64	34.3	58	108.5	40	-0.825	38	20.2	38	25.3	38	85.7
Total collection	64	928.1	61	518.3	40	1,282.4	39	223.8	38	367.7	38	148.2

S Collections

1. 34.3 subscriptions gained, compared to a U loss of −0.83.

Although the numbers are not large, the ranges between the lows and highs are considerable. For example, in the total annual operating budget, the S gross change in the group ranges from −$7,754 to $42,136; the U group ranges from −$15,960 to $28,896.

The differences are more marked when the mean percentage changes are compared:

S Budgets

1. 168% gain in salaries compared to a U-group gain of 55%;
2. 257% gain in book budgets compared to U-group gain of 145%;
3. 325% gain in total AOE compared to U-group gain of 165%.

S Personnel

1. 19% gain in FTEs compared to U loss of −10.9%;
2. 20% gain in professional librarians compared to U loss of −49% and NA loss of −64%.

S Collections

1. 235% gain in bound volumes compared to NA gain of 51%;
2. 109% gain in subscriptions compared to U-group gain of 20% and NA-group gain of 86%;
3. 518% gain in total collections compared to U-group gain of 224% and NA-group gain of 148%.

Once again, the ranges are quite disparate. For example, in subscription growth, the S high was 1060% compared to the U high of 263% change. Looking at the subgroup of those institutions reporting a zero value in their initial applications on a number of the variables, one finds confirmation of the same effects, although the small cell sizes make comparison difficult.

One program concern was with established hospitals having either no resources at all or deteriorated collections. Would they be poor investment risks considering the apparent lack of institutional interest? Would continuing support for a new library likely result? The information obtained for institutions having no resources, as far as the S group is concerned, shows actual gains in all variables. One impressive figure is the mean gain in total annual operating budget: $12,456. On an overall group basis the low to high range of total AOE change is $2,579 to $31,200. Thus, the return in terms of a change in the library budget for a $3,000 grant investment in those institutions over a two-year period appears to be four times that amount, on the average, and ten times the amount at the upper end.

For experimental precision, the results could be qualified by a factor reflecting changes in the national economy, such as inflation. However, such precision really is not necessary because the magnitude of change is such that the results and conclusions remain the same, although the actual numbers might change somewhat.

Analysis of Independent Variables

The three study groups were analyzed along the dependent variables of (1) budget; (2) personnel; and (3) collection size by independent variables (a) bed capacity, (b) location, (c) teaching programs, and (d) health personnel.

Bed Capacity Related to Budget. The study population was stratified into three groups by bed capacity: fewer than 200; 201–400; greater than 400 (Table 3). In terms of total budget, the S groups outperformed the U groups regardless of hospital bed capacity. The S group showed the greatest changes, compared to the U group, in the 201–400-bed range. In salaries they showed 338% increase compared to 10%; in book and overall budget, the same ratios. Within the S group itself, the under-200-bed size showed the greatest total budget growth (682%) and held its own in relation to the book budget, but had growth rates lower than those of the medium-size hospitals as far as salary change is concerned. Although the percentage of change is far greater in the smaller hospital, the return on the original investment is greater in the larger hospitals in terms of actual dollar differences.

Bed Capacity Related to Personnel. For the variable of personnel, the smaller hospital group showed the greatest gains in overall FTE change. The gain in the professional librarian category rose within the medium-size hospitals to a surprising 116% growth versus major losses at all other hospital levels in all other groups. The U group showed one advance over the S group: growth of the number of nonprofessional librarians, which occurred at the medium-size hospital level. However, even with this gain, the U group was overshadowed by the NA group in the same range which showed a 103% growth compared to the 43% growth of the U's.

Bed Capacity Related to Collection. The greatest collection-size growth occurred in the U-group small hospitals (787% change), and the second highest change occurred in the S-group small hospitals. The S group sustained more growth in subscriptions than the U group. Within the S group both the smaller and the medium-size hospitals showed nearly the same growth rates, approximately 140%. The relative sizes of the subscription list remained the same, but the volume increased. The relative total collection sizes for the S group have remained the same; whereas with the U group, the growth in the small hospital was of major proportions compared to that of the larger hospitals (460% to 64%). While we realize that the figures for bound volumes and total collections are of questionable reliability, the actual value figures show some interesting comparisons; for example, even though the S-group small hospitals showed twice as great a percentage change over the S-group medium-size hospitals, the mean actual figure is much lower. The small hospitals started out with less and grew faster.

Rural or Urban Location. The comparison was made only between S and U groups. The most interesting finding is that the rural S group outperformed the U group, both rural and urban, except on the variable of nonprofessional librarian growth. Furthermore, the rural S group outperformed the urban S group except for salaries (where there is only a small difference favoring the urban S's) and professional librarians. Thus, in rural areas where there is likely to be a maldistribution of health services and personnel, grant support was fully justified in terms of medical library growth during and after support.

Teaching Programs. The educational programs of the hospital were considered as part of the review criteria, and the applicant was asked to identify allied health professional schools served, the number of students, the number of interns and residents serving in the hospital, and university affiliation (Table 3). Within the S group the lack of residency programs was no great hindrance to growth. A 57% increase in number of professional librarians was found in this group, and the group also experienced a larger overall growth in total budget (400% compared to U 150%) and in bound volumes and subscriptions. The existence of schools of allied health professions and a significant number of students associated with the hospital either directly or through affiliation was thought to be an indicator of the need for a library and of library growth potential. It was therefore surprising to find that very few hospitals reported more than one school of allied health sciences, and the study groups broke quite evenly between those without schools and those reporting one or more. Again, the S group with no schools performed better than the U group with schools on such variables as total budget, FTEs, subscriptions, and collection size. The outstanding growth in number of professional librarians took place within the S group serving more than one school, and the S group outdistanced the U group on all variables except two: nonprofessional librarians and bound volumes. The hospitals with fewer than 100 students showed a startling increase in subscrip-

tions (283%) as compared to hospitals with more than 100 students (61%), but the FTE growth in the S group with more students (47%) quite outdistanced the S group with fewer students. The U group eclipsed the S group as far as both professional librarians and nonprofessional librarians are concerned, showing 40% and 93% increases respectively. The presence of schools and large numbers of students did not appear important within the groups, except for the factor of library personnel growth, which was associated with a larger number of students.

Professional Health Personnel. Review criteria gave weight to the presence of professional personnel. The number of staff physicians, consulting physicians, and RNs were requested in application forms (Table 4). The number of professionals often correlated with hospital bed size in community or general hospitals, but this did not hold true for specialized hospitals such as mental health facilities.

A larger growth rate of FTEs occurred in S hospitals with fewer than thirty physicians, but the big leap in number of professional librarians came in the S hospitals with more than thirty physicians. Also associated with this group is a much higher growth of subscriptions than is found in any of the other subgroups. The number of consulting physicians does not appear to be important as a correlative to growth rates within the group: hospitals with fewer than fifteen consulting physicians on the average showed higher growth rates on most variables. However, with the U group, the larger number of consulting physicians was associated in most cases with higher growth rate. Within the S group, in terms of total budget and personnel, growth was most consistently found in the under-100-RN group. This was also true within the U group for total budget and collection size; however, the gains in personnel were in the group with the greater number of nurses. On the whole, the improvement grant program appears to have helped those hospitals with the smaller number of professionals.

Analysis of RML Data

The four groups of RML data—(1) frequency of interaction with the network, (2) type of activity, (3) amount of use of document delivery, (4) RML subjective assessments of the institutions—were relatively evenly distributed across the RMLs, and it is assumed, therefore, that the mean percentage scores used in this analysis can be generalized. Once again, overall, the S group outperformed the U group, but of interest is the consistent similarity between the S and the NA groups. More than 50% of the S and NA groups interact regularly with the RML network.

Four types of network activity were considered: interlibrary loan, acquisitions, cataloging, and "other" (Table 6). All groups showed the greatest activity in interlibrary loan, and here again the S and NA groups are quite similar and reflect more interest than the U group. Use of the network for acquisitions information is practically zero. One might speculate that the widely distributed information about core lists may have solved many acquisitions problems for all libraries. There was also very little interest in cataloging information or assistance. Of the "other" activities considered, most of these related to consultation at a higher level than the three specified. They are, in order of frequency mentioned: training and workshops, reference consultation, grant application consultation, MEDLINE consultation, planning consultation, audiovisual consultation, and cooperative activities. Although there was a low frequency of document delivery activity, all three groups followed the same pattern of steady growth.

RML assessments of the institutions under study suggested that the S group was somewhat more active in attending local and regional meetings than either of the other two groups. Regarding library service relative to the size and needs of the institution, the RMLs believed that the NA groups were somewhat underdeveloped and less adequate than the other two groups. Although they are not remarkably different, there is some suggestion that the S group is more visible at meetings, interacting more with their resource libraries, asking for other kinds of consultation, somewhat stronger in document delivery activity, and providing somewhat better services. The likelihood of bias exists, however, for the RMLs are well aware of the hospitals in their region and know which received improvement grant awards.

Most RML staff took the opportunity to comment on what the hospital libraries in their region might need to bring them to their maximum potential. Foremost among the cited needs is more personnel, more who are committed to the job and who can receive training and consultation. The general impression from the comments is that the S study group is well on its way to fulfilling more than minimal expectations, but additional support and encouragement is needed to sustain development. The RMLs were somewhat divided

TABLE 6
RML QUESTIONNAIRE
RML REPORT OF INTERACTION BY ACTIVITY
MEAN PERCENTAGE CONTACT COMPARED TO REGULAR CONTACT PERCENTAGE

Group	N	Acquisitions		Cataloging		Interlibrary loan		Other	
		Mean %	Regularly %	Mean %	Regularly %	Mean %	Regularly %	Mean %	Regularly %
Successful	69	37.7	10.0	34.8	17.0	95.7	61.0	50.7	25.0
Unsuccessful	47	29.8	6.0	21.3	6.0	83.0	40.0	46.8	11.0
Nonapplicant	32	6.3	3.0	12.5	4.0	87.5	63.0	56.3	28.0

in terms of financial levels of support and duration of support. One of the RML directors passed on an anecdote about the improvement grant program and the $3,000 award. An assistant hospital administrator said to one of the RML directors, "It's true that $3,000 isn't very much to go to a lot of trouble over; the hospital could provide that and expects to do so. But if the federal government thinks it is a worthwhile project, the community will too."

DISCUSSION

There were two limited objectives of this evaluation study. One was to determine whether or not the successful recipients of improvement grant awards showed changes that were in any way different from those of a similar group of unsuccessful applicants or a similar group of nonapplicants. It is clear that the program has been successful in terms of program goals: it did stimulate growth in budgetary and personnel support for the libraries. This latter fact is of the greatest significance; the degree and extent of personnel support is far beyond expectations.

The successful-applicant group showed significant gains over the unsuccessful group in all areas except nonprofessional librarian growth and in the growth in bound volumes. However, neither of these two results necessarily reflects badly on the successful group because they were offset by a stunning rise in the number of professional librarians and of journal subscriptions. One might speculate that the S groups came closer to the desired program aims by placing more emphasis on current journal materials and less on monographic collections. Contrary to expectations, a rural location is not a handicap to growth, nor is small hospital size, in terms of total budget growth. The absence of residency training programs, of schools of allied health sciences, or of a large number of students was not a deterrent to impressive growth. Improvement grants appear to have helped most of the hospitals with the smaller numbers of professionals.

There was speculation that the act of applying for an improvement grant would have a stimulating effect upon the library. Although the U group showed budgetary growth without any help from NLM, the growth was comparably less. In some ways, in overall FTE growth and subscription growth, for example, the U group did less well than the NA group. Thus, the hypothesis that applying for a grant had a stimulating effect is only partially supported. It is also recognized that a variety of other factors may have had some influence, such as the attitude resulting from not receiving an award; however, the consideration of such factors was beyond the scope of this study.

Although the RMLs report a steady growth in network participation by the recipients of awards, a greater degree of involvement activity was hoped for. The RML data reflect a somewhat weak connection between the study groups and the RML network. This outcome is a likely result of the applicants' working directly with NLM and bypassing the RMLs, and the nature of the grant program in assisting the basic-unit-level institution in becoming self-sufficient or dependent on its own immediate group.

Continuation of the Medical Library Resource Improvement Grant Program is appropriate and justified. The evaluation study shows that the program has been highly successful beyond expectations in the stimulation of hospital library development. The need for such a program remains; there are still a large number of basic unit institutions without adequate library resources.

Of equal importance is that it is particularly timely to highlight support of basic-unit development in the RML network. Development of a na-

tional network of health science libraries is well established among NLM, medical school libraries, and other libraries of large health facilities. The regional medical libraries have begun the laborious task of expanding the network by bringing basic-unit institutions in as full participants; however, it has proven difficult to bring the basic units up to a level adequate enough to participate. The evaluation study shows that the basic unit can develop itself to a point of being a full network participant, given adequate assistance.

Although the original goal and objectives of the program remain valid, program modifications are appropriate. Study results, experience with the program, and communications received over time clearly indicate a need for flexibility in the project time period, the amount of support available, and the requirement for library staff. One year is not sufficient time to develop the library, and many grant recipients have requested and received an extension of time in their grant award period in order to expend funds more wisely and to develop the facility. In addition, one year is often insufficient time to have the library service firmly established. In 1971 the $3,000 award enabled purchase of one of many recognized core collections for hospital libraries. Because of the increasing costs of informational materials, and inflation, this level of funding is presently inadequate. The intent of requiring a one-half FTE individual for the library is to guarantee an adequate human resource to provide service and assure maintenance; however, the one-half FTE requirement is unrealistic for those institutions with collections that are small, but adequate for their needs. Rather than continue an unrealistic requirement, flexibility is proposed in the amount of library staff time, but the one-half FTE example should remain as a recommended standard.

Increased emphasis must be placed on promoting access to and utilization of information through resource sharing and cooperative activities. Although the grant has been for single institutions, in a few instances it has also been utilized to support consortium development where a number of institutions have applied simultaneously and included a plan for development in the narrative of each application. Such projects were usually encouraged by NLM Extramural or RML staff; the grant mechanism itself could not strongly encourage cooperation in resource sharing because seed capital could not be provided for the startup costs associated with consortium development. Modification of the program to permit the support of consortia allows the development of organizational structures that are particularly conducive to resource sharing. In addition, consortium programs have also created a foundation for a variety of other interinstitutional cooperative activities.

The program needs to be structured for greater RML involvement. Early RML contact with the applicant should be fostered, and it would be advantageous to include the RMLs in the grant review process.

The study shows that the grants have stimulated library development and institutional interests in the library function. In terms of the cost/benefit aspects of the program, even though the award is relatively small, the return after two years in the sense of a change in the library's budget for the $3,000 grant investment is an average of $12,000 with a high of $30,000.

Even though development occurred, the modified program should further stress institutional recognition of responsibility and understanding of the library's potential role in the institution, such as supporting educational activities, as well as participation in the RML network. Where possible, institutions should be encouraged to begin support of the expanded library program prior to termination of the grant award.

Conclusion

The Board of Regents, NLM, reviewed the study results at their June 26–27, 1975 meeting, and recommended continuation of the existing program with the following modifications:

1. That the purpose of the program be broadened to support, in addition to individual institutions, consortium arrangements where members propose, among other things, an effective program for resource sharing, and
2. That the period of support be extended to two years with a maximum of $4,000 in the first year. The second year of support would include a maximum of up to $3,000 for the individual institution or for each participating member of a consortium, and would be conditioned by a provision of up to $1,000 in matching funds (matching ratio of three to one) from the grantee and each institution involved in a consortium.

The one-half full-time equivalent for a library manager is the recommended standard.

Procedures to implement the regents' recommendations are being developed. It is anticipated

that applications under the modified program will be accepted some time in the spring of 1976.

Support will therefore continue to be available from the National Library of Medicine to assist in the development of collections of basic informational resources at community health facilities. There remain a large number of these facilities without adequate resources, and the evaluation study has shown that the provision of seed money is a good investment.

Resource sharing and cooperative activities among information resources at the local level enhance services, enrich resources immediately available, and improve operational cost effectiveness. The libraries provide a viable and necessary communication link for local health workers to the national community of health professionals. These institutions should be encouraged to expand cooperative activities beyond the initial creation of library consortia to include a more active role in educational and service programs.

The improvement grant program has been, and will continue to be, an effective mechanism for establishing basic information collections. A major program objective of NLM is to create mechanisms by which the nation's wealth of biomedical information is made available to all health professionals. A key concept in the RML network philosophy is that participants who benefit from the network's services should extend the network by providing similar information services to users in their community. The challenge for medical librarians and their health science colleagues is to find a way to work from the base developed and to evolve viable community health information centers.

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