

Appendixes

Appendix Am —The National Library of Medicine: Organization and Activities*

Introduction

The National Library of Medicine's (NLM or the Library) organizational structure and intramural activities primarily reflect the legislative intentions of the National Library of Medicine Act of 1956 (Public Law 84-941). Similarly, its extramural programs are grounded in the Medical Library Assistance Act of 1965 (Public Law 89-241). These congressional actions serve to organize the discussion that follows. Three other legislative and executive mandates have also shaped the Library and, while not discussed in detail, warrant mention: the transfer of the Public Health Audiovisual Center (now the National Medical Audiovisual Center) to NLM in 1967; the development of the Toxicology Information Program, also in 1967; and the founding of the Lister Hill National Center for Biomedical Communications in 1968.

National Library of Medicine Act of 1956 (Public Law 84-941)

NLM began as a small collection of medical books and journals in the Office of the Army Surgeon General in 1836. By 1895, it was international in scope, and had grown from some 1,800 volumes to over 117,000 books and 192,000 pamphlets covering almost every medical topic. In 1922, it was named the Army Medical Library. In 1952, it was renamed the Armed Forces Medical Library to reflect its broadening user community. In 1956, with passage of the National Library of Medicine Act (Public Law 84-941), the collection was recognized as a "great National medical resource" serving the Nation's entire medical community.

Congressional Intent

Despite its lofty position as the "largest and most important medical library in the world," by 1956 the Armed Forces Medical Library was beginning to suffer under an awkward administrative arrangement, inadequate for the increasingly diversified demands levied against its resources. In hearings before the House Committee on Interstate and Foreign Commerce, the Library was reported to be "inadequately housed in a building where its collections are threatened by loss from fire and by damage through exposure to the weather." Administered by the Department of

Defense, its funding had been subject to wide fluctuations. The committee concluded that "difficulties of operation have arisen because no clear authority exists for many of the functions which the Library now serves."¹

Through the National Library of Medicine Act, Congress sought to assist "the advancement of medicine and the related sciences, and to aid the dissemination and exchange of scientific and other information important to the progress of medicine and to the public health" (Public Law 84-941). It wished to improve the health of people in the United States by providing access to information for health professionals and policy-makers. Congress did not assign the provision of health information to the public to NLM, but turned to other branches of the Public Health Service to carry out this responsibility.

Authorizing Legislation

An amendment to the Public Health Service Act, the National Library of Medicine Act established NLM in 1956, and authorized it to acquire, preserve, and make available materials pertinent to medicine; to prepare and make available indexes, catalogs, and bibliographies of the materials; and to provide reference and research assistance. The act established a Board of Regents whose members, appointed by the President, are to advise the Surgeon General on "important matters of policy in regard to the Library." Appropriations for the construction of facilities adequate for the Library's use were also authorized. Finally, the act transferred the Armed Forces Medical Library from the Department of Defense to the Public Health Service.

Congress recognized the Library's importance to the advancement of medicine in both the United States and throughout the world. Placed under the auspices of the Public Health Service, the Library is in a position "where contact with and participation in programs of medical research will provide the best environment for the Library's proper functioning and continued growth."²

The National Library of Medicine Act does not require renewal, and since its enactment has had few changes. One important change was made in 1978, when the power to appoint members to the NLM Board of Regents was transferred from the President to the Secretary of Health, Education, and Welfare

*Information in this appendix was primarily obtained from the staff and publications of the National Library of Medicine in 1981.

¹U. S. Congress, House of Representatives, House Report 84-941, 84th Cong., 1956.

²Ibid.

(Public Law 95-622). The amendment was prompted by the need to quickly fill vacant seats on the Board.

Organization of NLM

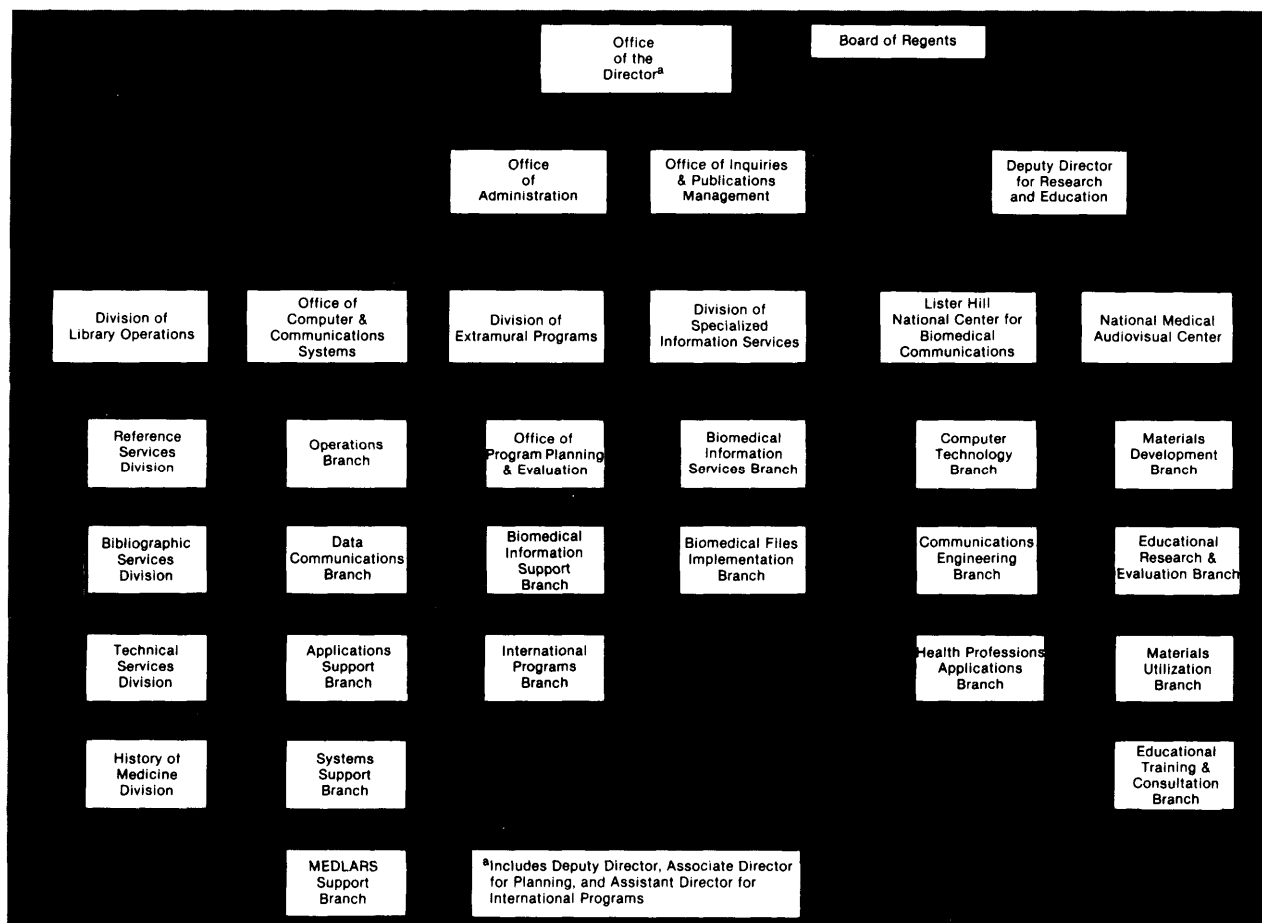
Since its designation as a national library in 1956, NLM has continually expanded its scope of operations and responsibilities. As evident from its current organizational structure (see fig. A-1), the Library has had many functions added to those authorized in the original act. The organizational structure reflects both legislative and executive actions from **1956 to 1968**. The last major addition to NLM was made in 1968, when the Lister Hill National Center for Biomedical Communications was established as the Library's internal research arm. That same year, NLM was transferred from the Surgeon General's Office to the National Institutes of Health (NIH).

BOARD OF REGENTS

In accordance with legislative requirements, the 10 members of the NLM Board of Regents, appointed by the Secretary of Health and Human Services, are leaders in the following disciplines: the fundamental sciences, medicine, dentistry, public health, hospital administration, pharmacology, scientific or medical library work, public affairs, and representatives of the general public. The Regents serve overlapping 4-year terms. There are also seven ex officio members: the Surgeons General of the Public Health Service and the three Armed Services; the Chief Medical Director of the Veterans Administration; the Assistant Director for Biological, Behavioral, and Social Sciences of the National Science Foundation; and the Librarian of Congress.

Historically, the disciplines Board members represent have generally adhered to legislative requirements.

Figure A-1.—National Library of Medicine



SOURCE: National Library of Medicine, January 1981.

However, the Secretary has some latitude in his appointments, so they tend to reflect the more immediate interests of the Library. For example, in fiscal year 1981, there were no obvious appointments from the public health field or the health services research community, although there have been such members in the past. Rather, two Board members had expertise in computer systems or the computerization of biomedical information, as NLM is currently concentrating many of its resources on the development of MEDLARS III, the next generation of its computerized on-line bibliographic retrieval system.

The Board meets three times a year and provides advice to the Secretary of Health and Human Services, the Assistant Secretary for Health, the Director of NIH, and the Director of NLM on Library policy. The Board makes recommendations on "the acquisition of materials for the Library, the scope, content and organization of the Library's services, and the rules under which its materials, publications, facilities, and services shall be made available to various kinds of users" (Public Law 84-941). The Director of NLM has the responsibility for operating the Library and so, in essence, the Board is advisory to him. The Board promulgates policy, and is the final review body for extramural grant applications, which are evaluated for program and policy relevance.

ORGANIZATIONAL DIVISIONS

Division of Library Operations.—The Division of Library Operations is the traditional core of the Library. It performs NLM's basic activities—collecting, organizing, indexing, cataloging, and making available much of the world's biomedical literature—and has been instrumental in creating and adopting new techniques to improve library services. Its four subdivisions and their functions are listed below:

- The Reference Services Division processes inter-library loans, provides reference and bibliographic services, and maintains and preserves the Library's general collection.
- The Bibliographic Services Division indexes serial literature for Index *Medicus* and other indexes, enters references into the data bases, and coordinates the on-line network that makes references available via NLM's on-line data bases such as MEDLINE.
- The Technical Services Division selects and acquires printed material; catalogs and classifies books, monographs, Government documents, and other materials; and makes the information available through publications and on-line for other libraries to use. It is the national authority for bibliographic control of biomedical publications.

- The History of Medicine Division acquires, processes, and makes publicly available the Library's collection of historical biomedical books and journals. It also maintains active public relations and research programs on the history of medicine.

Office of Computer and Communications Systems.—This office provides data processing and communications support for all NLM operations. In addition to its routine activities, the office works toward improving the performance of NLM's computer equipment, adding new technological features and enhancing the capabilities of MEDLARS, and is developing a data communications system to manage the internal operations of the Library. As part of NLM's efforts to reach out to the library community, the office developed an innovative information management system that supported the 1980 White House Conference on Library and Information Services.

Division of Extramural Programs.—The Division of Extramural Programs administers five of the six grant programs that are authorized by the Medical Library Assistance Act of 1965 (Public Law 89-241). The sixth is the Regional Medical Library Program, which is administered from the Office of the Associate Director for Library Operations. All six programs are discussed in this appendix.

Division of Specialized Information Services.—The diversity of NLM's responsibilities is particularly visible in the Division of Specialized Information Services. The division operates the Toxicology Information Program, established at NLM in 1968 to centralize access to information on toxicology. The program draws toxicology information from several Federal and private, nonprofit agencies. The division has established computer-based toxicology data banks from information in the scientific literature and from the files of collaborating industrial, academic, and governmental organizations. It also established and administers toxicology information services for the scientific community.

The division's other activities include the Toxicology Information Response Center in Oak Ridge, Tenn., which performs literature searches in toxicology and environmental health; produces a number of publications, including one on toxicology testing and one on toxicology research; and conducts a series of collaborative projects with other Government agencies.

Lister Hill National Center for Biomedical Communications.—The center is responsible for developing methods to improve information transmission so that health professionals will have easier access to the overgrowing volume of information. It is the research and development branch of the Library and investigates the use of computers and communications technology in advancing health education, biomedical research, and health care delivery. Since the dedication of its

new facility, the Lister Hill Center Building, in May 1980, the center has emphasized intramural research.

One of the center's first accomplishments was assisting in the development of NLM's on-line retrieval system. It has also conducted research programs on the effectiveness of orbiting satellites for communicating medical information, the use of two-way television using microwave links for continuing medical education, and the use of computer-assisted instruction. Current and future projects include the development of knowledge-based programs in specialized areas of biomedicine that will make new medical findings and research information rapidly available to health professionals, particularly practitioners; and the design, development, and evaluation of an experimental storage and retrieval system to electronically scan, store, retrieve, and display documents acquired by NLM.

National Medical Audiovisual Center (NMAC).—The aim of NMAC is to improve the quality and use of biomedical audiovisuals in health professional schools and the biomedical community. Before it was transferred to NLM in 1967, NMAC was a component of the Center for Communicable Diseases (now Centers for Disease Control, CDC), and, in fact, remained in its Atlanta facilities until March 1980. As part of CDC, the center produced films of award-winning quality for the health education of high school students and the public. When it became part of NLM, the Board of Regents reoriented it to conform to the Library's legislative purpose, i.e., providing health professionals access to information.

NMAC's current activities include research and evaluation in audiovisual design and medical photography, training health educators in the use of audiovisual technology, and the management and distribution of a large collection of medical motion pictures and videotapes. NMAC was the original developer of AVLINE, an audiovisual data base, which was transferred to the Division of Library Operations in 1977, NLM plans to emphasize NMAC's research function in the future, and merge NMAC with the Lister Hill Center (102).

INTERNATIONAL ACTIVITIES

NLM has been active in international programs since John Shaw Billings became the Librarian of the Library of the Army's Surgeon General in 1865. Wanting to develop a collection that was international in character, Billings collected library materials from throughout the world and began an exchange program with foreign libraries, medical schools, and other scientific institutions. Today, NLM has formal exchange agreements with **382 institutions** in **72 countries**.

NLM's Special Foreign Currency Program, authorized under the Agricultural and Trade Assistance Act

of 1954 (Public Law 83-480), supports the preparation of secondary literature, including critical reviews by outstanding scientists in particular fields, and translations of foreign monographs in the health sciences. The program is currently active in Poland, Egypt, Tunisia, India, Yugoslavia, and Pakistan, and in Israel under awards from the U.S.-Israel Binational Science Foundation. Other international programs include the exchange of biomedical literature, the provision of library services such as interlibrary loans to foreign institutions, the specialized training of qualified individuals from abroad who have national or international sponsorship, technical consultation and collaboration with governmental and nongovernmental international organizations, and participation, as appropriate, in formal U.S. bilateral health agreements.

There are, as well, bilateral MEDLARS agreements with 13 foreign countries—Australia, Canada, Colombia, France, Italy, Japan, Kuwait, Mexico, South Africa, Sweden, Switzerland, United Kingdom, and West Germany—and with the Pan American Health Organization. These agreements do not require the direct expenditure of U.S. moneys, nor the expenditure of foreign funds to the United States, but provide centers in these countries with access to MEDLARS in exchange for indexing services that foreign centers either perform on a quid pro quo basis or pay U.S. commercial contractors to perform. Operational decisions, such as determining who accesses the data bases, are the responsibility of the foreign center.

Appropriations and Staffing

NLM's appropriations in 1970 to 1982 are displayed in table A-1. A continuing resolution appropriated \$44.4 million for 1982. Funds for the extramural grant program declined by more than \$2 million from the 1981 level, while funds for library operations increased by more than that amount. NLM will use most of the operations increase for development of MEDLARS III. The decrease in the grant program was required in the reauthorization of the Medical Library Assistance Act for 1982.

The full-time permanent staffing level remained fairly stable from 1975 to 1980, reaching a high of **495** in 1978. However, in recent years part-time temporary staff have swelled the ranks (see table A-2). During these same years, the services rendered by NLM have increased substantially (see fig. A-2).

Medical Library Assistance Act of 1965 (Public Law 89-241)

After World War II, the Federal Government assumed an increasing responsibility for funding scientific

Table A-1.—NLM Appropriations, 1970-82 (dollars in thousands)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Medical Library Assistance Act													
Grants	\$3,950	4,080	4,790	4,547	4,455	4,330	3,712	5,375	5,187	5,987	6,725	6,831	5,000
Contracts	1,842	1,912	2,102	2,075	2,574	2,352	2,721	2,625	2,600	3,000	3,200	3,000	2,500
	\$5,792	5,992	6,892	6,632	7,029	6,682	6,433	8,000	7,987	8,987	9,928	9,831	7,500
Intramural													
Lister Hill Center.	\$945	1,456	1,960	2,055	2,103	2,863	2,922	4,952	5,031	6,255	5,554	5,105	5,045
National Medical A/V Center	2,224	2,196	2,558	2,795	2,888	3,263	3,303	3,846	4,074	4,343	4,350	4,198	3,125
Library Operations.	7,431	8,348	9,030	9,018	9,502	10,860	10,821	12,255	13,147	15,258	16,014	17,527	20,082
Toxicology Information.	1,552	1,280	1,370	1,590	1,627	1,915	1,947	2,277	2,334	2,401	3,368	3,105	3,299
Direct Operations	594	810	985	1,160	1,236	1,389	1,582	1,563	1,661	1,728	1,808	1,788	1,821
Program Management.	1,144	1,354	1,332	1,910	1,944	1,874	2,057	2,341	2,512	2,459	2,981	3,092	3,330
Total	\$19,682	21,436	24,127	25,150	26,329	28,850	29,065	35,234	36,746	41,431	44,000	44,666	44,402
Total (in constant dollars) ..	\$19,682	20,280	21,815	21,812	21,684	21,840	20,850	23,823	23,024	24,102	23,822	22,673	21,660

SOURCE: National Library of Medicine

Table A.2.—NLM Staff, Fiscal Years 1975.81 (actual on-board count)

Activity	1975	1976	1977	1978	1979	1980	1981
Lister Hill Center	P 22	24	24	35	30	34	40
	0			3	5		9
National Medical A/V Center	P 101	101	88	88	76	37	56
	0			7	1		4
Library Operations	P 196	201	212	221	212	202	217
	0			38	36		24
Office of Computer Services	P 52	54	52	51	51	51	54
	0			4	4		3
Specialized Information Services	P 17	18	17	18	19	19	27
	0			3	4		4
Extramural Programs	P 22	24	27	25	25	23	22
	0			6	5		8
Program Direction.	P 48	50	52	57	55	62	58
	0			11	9		14
Total	P 458	472	472	495	468	428	474
	0			72	64		66
	458	472	472	495	540	492	540

P - Permanent full-time,
O - Other.

SOURCE: National Library of Medicine,

ic research, particularly in the health sciences. The result was an explosion of new scientific information in the biomedical and health sciences that overwhelmed the ability and facilities of health science libraries. Libraries had received little Federal support comparable to that given research, and lacked the trained personnel, resources, and techniques to ensure that the full value of this new knowledge could be realized. By 1965, the growth of information had also outstripped health practitioners' ability to apply it, prompting the need for continuing education programs to update professionals' skills. The possibility of using medical libraries as educational tools for health profes-

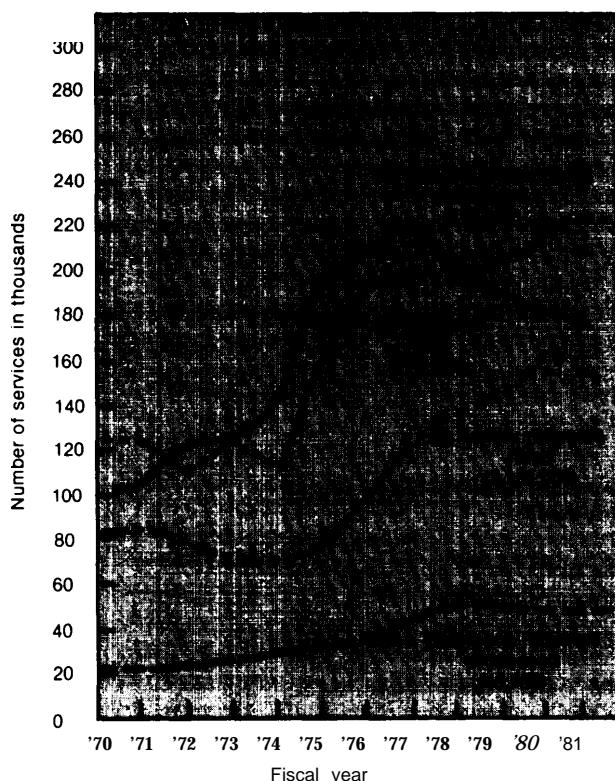
sionals was an important factor in enacting the Medical Library Assistance Act of 1965 (3).

Congressional Intent

In hearings before the House Committee on Interstate and Foreign Commerce in 1965,³ studies were cited indicating a need for additional library space, more trained biomedical librarians, additional volumes and periodicals, support for research and development projects in biomedical communications and medical

³U. S. Congress, House Report 89-1026 accompanying H.R. 3142, Interstate and Foreign Commerce Committee, Sept. 20, 1965.

Figure A-2.—Representative NLM Services, 1970-81



^aInterlibrary loan.

SOURCE: National Library of Medicine.

library science, and a system of regional medical resource libraries to ensure access to medical documents and avoid the costly duplication of extensive collections.

Congress thus faced a series of interrelated problems. Considerable Federal assistance had been directed toward “the intensive development of health research institutions, medical schools, and other medical facilities,” including hospitals, and to increasing the supply of physicians, nurses, and other health professionals.⁴ Concurrently, and again largely due to Federal funding, the knowledge bases of medical research and practice were broadening, drawing on many new fields and disciplines, and requiring, as well as adding to, a widening, complex body of literature.

During this period, there was little support for medical libraries. The condition of many deteriorated from the pressures of rapidly developing programs in medical institutions, and they were unable to meet the demands of a dynamic medical community (37). In 1964, a Presidential commission noted “that unless major at-

⁴Ibid.

tention is directed to improvement of our national medical library base, the continued and accelerated generation of scientific knowledge will become increasingly an exercise in futility” (121).

At the urging of numerous professional and academic associations, Congress enacted the Medical Library Assistance Act of 1965 (Public Law 89-241) to address medical libraries’ needs for additional resources and personnel to meet the demands of a growing user population and an expanding body of biomedical and health science information. Through the act, Congress hoped to strengthen local and regional health science libraries so that researchers and practitioners could keep more fully informed of research findings and new medical developments, and ultimately provide better health care for the American people.

Authorizing Legislation

The Medical Library Assistance Act reflected a fundamental change in Government policy regarding support for libraries allied with the health sciences. An amendment to the Public Health Service Act, it provided financial assistance for the development of facilities and techniques necessary to “collect, preserve, store, process, retrieve, and facilitate the dissemination and utilization of biomedical and health science . . . knowledge and information” (Public Law 89-241).

The act outlined a 7-point approach to strengthen the Nation’s medical libraries. The Surgeon General, through NLM, was authorized to:

- assist in construction of new and renovation of old medical library facilities;
- assist in the training of medical library personnel and personnel in fields related to health;
- financially assist physicians and other scientists in the compilation of existing and new scientific knowledge;
- assist in the development of innovative technological advancements in medical library techniques;
- assist in the expansion of the resources and services of medical libraries;
- assist in the establishment of a system of regional medical libraries to coordinate the geographic sharing of resources; and
- assist financially in the publication of biomedical science works.

The Medical Library Assistance Act of 1965 also established the authority to assist in the establishment of regional branches of NLM in the National Library of Medicine Act of 1956.

NLM had previously submitted almost identical legislative specifications to Congress and the ad-

ministration. One of its concerns was that, with the continued dependency of local libraries, NLM would evolve into a "monolithic medical resource in this nation" (37). NLM believed that the country required "the development of a complex of regional medical libraries . . . with adequate facilities, resources, and personnel to serve those sections of the Nation with underdeveloped library facilities" (37).

The act authorized NLM to provide financial assistance, through a system of competitively awarded grants and contracts, to "all appropriate public and private institutions and individuals active in the provision of health services or in health-related teaching and research" (Public Law 89-241).

Congress has reauthorized the Medical Library Assistance Act six times since 1965. Although the original intent remains, the legislators have modified some portions of the act over the years. For instance, in the original legislation, Congress intended "medical libraries" to be defined in the broadest sense, to include all libraries affiliated with health and biomedical sciences, though the need for this legislation was largely defined in terms of the needs of medical school libraries. In 1970, the title of the act was changed to include "health communications," adding emphasis to the breadth of intent for participation in the programs. Eligibility extended to all "clinical fields including medicine, dentistry, optometry, pharmacy, osteopathy, veterinary medicine where relevant to human health, nursing, public health, other health-related fields, and fundamental and applied sciences when related thereto" (Public Law 91-212).

In 1973, Congress removed the authority to assist in the construction of library facilities. The next year, it authorized a single appropriation for the assistance programs, leaving the allocation of funds for individual programs to the discretion of the Library. In the 1978 reauthorization, NLM was encouraged to

"play a more aggressive role in the collection and dissemination of research findings directly relevant to clinical practice" and was reauthorized through September 1981. The most recent reauthorization extends the Medical Library Assistance Act through September 1985.

Appropriations

The 1965 Medical Library Assistance Act authorized \$105 million for 1965 to 1970 for NLM to initiate programs assisting the Nation's medical libraries and the health science community. However, only \$40.8 million was appropriated for this period. In assessing the achievements of programs established under the act, the Director of the Library concluded that although NLM had significantly improved medical libraries and information resources and services, the objective of the act had not been fully realized due to insufficient funding (37). This sentiment was echoed in the Senate Report accompanying the 1970 reauthorizations.

As can be seen in table A-3, a large discrepancy between the funds authorized and those appropriated persisted until the most recent reauthorization. For fiscal year 1981, \$9.8 million was appropriated, and \$7.5 million is scheduled for fiscal year 1982. Although there is an apparent growth of appropriated funds from 1970 to 1981, figure A-3 indicates an actual decrease in constant dollars.

Extramural Grant Programs

NLM's Division of Extramural Programs originally administered seven authorities, but, as noted earlier, Congress removed the authority to assist in construct-

^aU.S. Congress, Senate Report 91-460 accompanying H.R. 11702, Labor and Public Welfare Committee, Oct. 16, 1969.

Table A.3.—Medical Library Assistance Act Authorizations and Appropriations, Fiscal Years 1975-82 (dollars in thousands)

Fiscal year	Funds authorized	Funds appropriated	Percentage of authorized funds appropriated	Difference between authorized and appropriated funds
1975	\$17,500	\$6,682	38	\$10,818
1976	20,000	7,658 ^a	38	12,697
1977	20,000	8,983 ^b	62	5,613
1979	15,000	8,986	60	6,014
1980	16,500	9,924	60	6,576
1981	18,500	9,831	53	8,669
1982	7,500 ^c	7,500	100	0

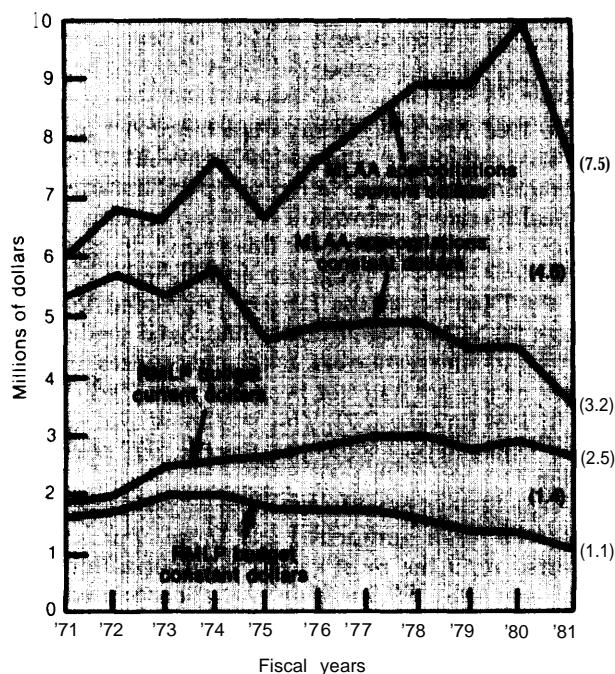
^aIncludes fiscal year transition quarter, July 1, 1976-Sept. 30, 1976.

^bIncludes original appropriation of \$7,967 thousands and an additional \$1 million of reprogrammed funds approved by Congress.

^cAuthorization extends through September 1982.

SOURCE: National Library of Medicine.

Figure A-3.—Medical Library Assistance Act (MLAA) Appropriations and Regional Medical Library Program (RMLP) Budget Current and Constant Dollars, Fiscal Years 1971-81 (based on 1969 constant dollars)



SOURCE: National Library of Medicine

ing library facilities from the Medical Library Assistance Act in 1973. The authority had been exercised only between 1968 and 1969, when NLM awarded grants to nine medical schools, one school of optometry, and one school of veterinary medicine with the \$11.5 million appropriation.

In 1981, the Associate Director for Library Operations was assigned responsibility for the Regional Medical Library Program (RMLP). Nevertheless, all the extramural programs are interrelated, and many of the grant programs administered in the Division of Extramural Programs, particularly the resource grants, promote the aims of RMLP. (RMLP is discussed below.)

The division sees its role as interpreting and advancing the intent of Congress by means of various grant mechanisms. The major areas of emphasis have altered over the past 15 years in response to the health professional community's perceived needs. Currently, the grant programs emphasize biomedical communication, e.g., the storage and retrieval of biomedical information, the role of computers in medicine, and librarianship. The grant mechanisms the division uses are:

1. resource grants;

2. training grants in health sciences and computer technology;
3. research, development and demonstration grants;
4. special scientific projects; and
5. publication grants.

Each of the grant programs is described below, including its evolution from 1965 to the present, its current status, and OTA's assessment with respect to congressional objectives. Table A-4 displays the distribution of funds among the grant programs for fiscal years 1980, 1981, and 1982.

RESOURCE GRANT PROGRAM

At its inception, the resource grant program was primarily intended to correct deficiencies in collections, equipment, and organization of collections of established libraries. Health science libraries' resource needs appeared to be endless: in 1965, Congress observed that the libraries needed more than \$85 million, and authorized \$5 million per year for a 5-year period. Only \$11.8 million were appropriated for those 5-years however; NLM supported 401 libraries rather than its goal of 600 to 700.

Distribution of the funds from 1965 to 1970 reflected the formula grant then in use. The grant was based on a library's budget, and as a result, larger libraries received a larger proportion of the funds. Medical libraries in academic settings received 23 percent of the grants awarded, but more than 62 percent of the funds. The smaller hospital libraries received more than 50 percent of the grants awarded, but only 26 percent of the distributed funds. Other awards went to schools of dentistry, pharmacy, and veterinary medicine, as well as other academic institutions, State institutions, and professional societies. Grants could be used to acquire library materials, increase staff, or purchase materials.

Because more than 50 percent of the funds was used to increase libraries' collections, the Director of NLM concluded that the most immediate need had been the acquisition of books, journals, and other publications,

Table A-4.—Medical Library Assistance Act: Distribution of Funds Among Grant Programs, Fiscal Years 1980-82 (dollars in thousands)

Program	1980	1981	1982
Resource,	\$1,598	\$1,641	\$1,206
Training,	1,638	1,308	1,000
Research,	2,724	2,774	2,257
Special scientific projects,	142	290	23
Publications,	787	818	514
Total,	6,887	6,831	5,000

SOURCE: National Library of Medicine.

but that "the time had come for putting emphasis on improved service" (37).

In the 1970 reauthorization, Congress acknowledged that the grant program had been effective but that additional funding was required to bring health science libraries up to desired standards. In authorizing increased funding, Congress dropped the requirement for formula grants, but retained the provision of the original legislation that no institution receive more than **\$200,000** in grants in any fiscal year.

After assessing the first 5 years of the program, NLM decided that two types of grants were required. Most of the larger libraries had rebuilt their collections, due, in part, to the advantages offered by the formula grant. A Resource Project Grant Program was established so that existing *services* could be expanded or new ones created. The emphasis was on sharing resources and improving services (but not collections) by funding projects to streamline operations, utilize new technologies, and assist libraries in introducing and improving the use of new media, such as microfilm, audio-visuals, and computer-assisted instruction.

But it was also clear to NLM that many smaller (mainly hospital) libraries still needed assistance in developing their collections. In addition, the 1970 reauthorization had permitted grants to establish new libraries. Thus, in 1971 a Resource Improvement Grant Program was started that provided a 1-year, one-time grant award of up to \$3,000 to assist in establishing and/or developing a basic information collection in smaller community hospital libraries.

As a result of an evaluation conducted in 1974 by the NLM Office of Program Planning and Evaluation, the Resource Improvement Grant Program was modified to fund consortium arrangements as well as individual institutions (M). Single institutions can be funded for 1 year to a maximum of \$4,000, with a matching requirement of \$1,000 from the institution to develop a collection. Grants are also available for up to 2 years to support activities necessary for the planning, organization, and development of a health science library consortium, which is composed of a number of libraries, usually within a defined geographic area, that agree to share resources.

Up to \$4,000 can be provided per eligible consortium member, with a matching requirement of \$1,000 to support the purchase of basic information collections. The resource improvement grant program objectives are to strengthen the Regional Medical Library Network by developing adequate health science library collections at the local level, and to encourage resource sharing among local health-related institutions. Resource improvement awards for individual institutions

and consortia are considered "seed money" to further the program's purposes and are not to be used for operating expenses.

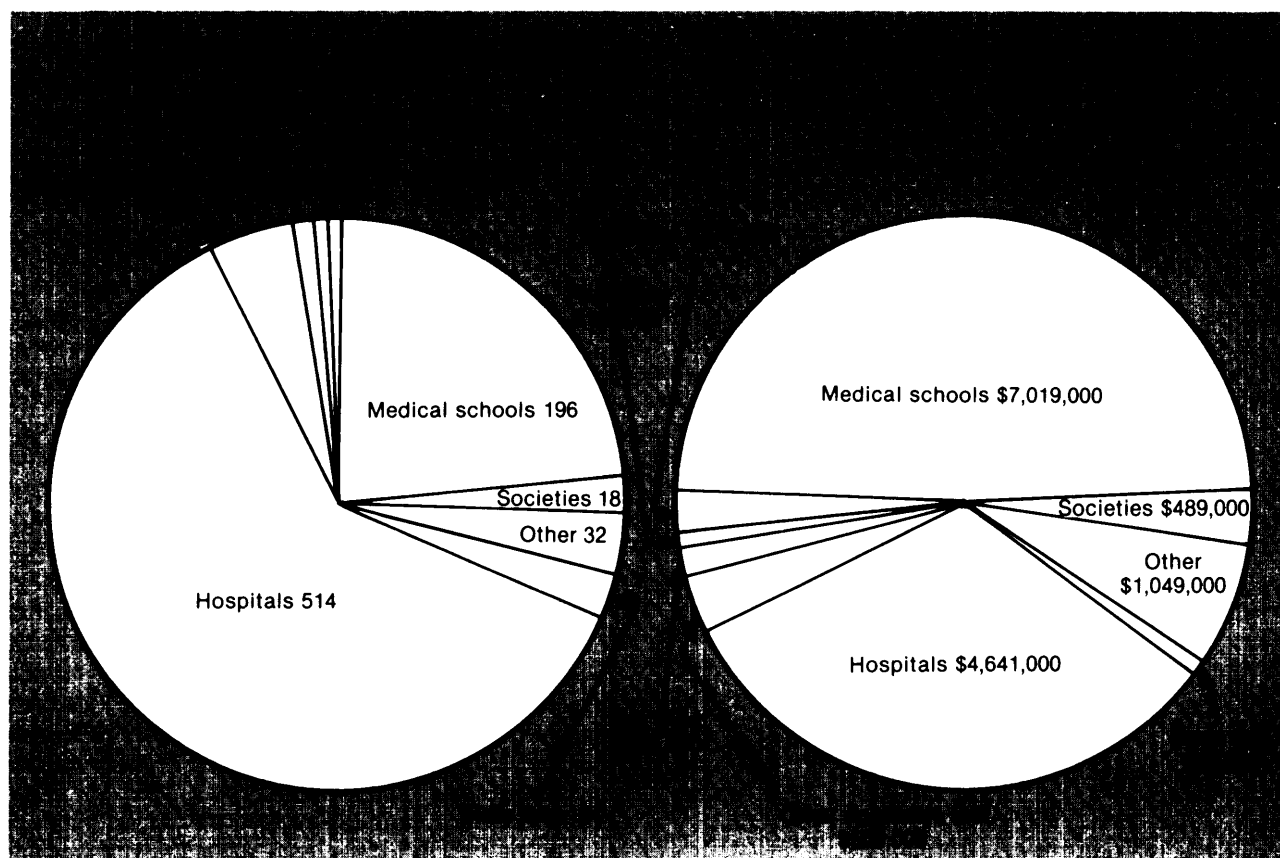
The consortium program has been well received by the health science library community. The program's goal was to organize **250** institutions in consortia within 5 years; it was realized in 2 years. At the outset of the program, an average of five institutions participated in each consortium. This average now stands at 10. Further, though Federal seed money is provided to each consortium for only 2 years, the size and number of consortia continue to grow. In part, this may reflect the increasing costs of maintaining collections and financing interlibrary loans, factors that make sharing resources more attractive. Currently, about half the Nation's **7,000** hospitals have access to an information facility, many through consortia arrangements.

As noted earlier, the formula mechanism used to determine the size of awards was an advantage for medical school libraries and a disadvantage for the smaller hospital libraries. The abolishment of the formula mechanism in 1970 partially corrected this discrepancy. Based on figures from NLM, libraries in medical schools received **48.5** percent of the funds awarded from 1971 to 1978, in contrast to **62** percent received from 1965 to 1970, and hospital libraries received **32** percent from 1971 to 1978, up from the **26** percent they had received from 1965 to 1970. Libraries in hospitals still receive the largest proportion of the awards (61 percent), while those in medical schools receive **23** percent (see fig. A-4).

In 1981, there were 74 active grants: 32 resource project grants and 42 resource improvement grants. Examples of the former are: 1) a Veterinary Medical Information Center Project; 2) an effort to organize the Adolf Meyer Papers; 3) a Computer Assisted Dental Simulation Project; and 4) a Community Information Network for Health Education Project. Funding for resource project grants varies widely, ranging from \$8,000 to Up to \$452,000 for multiyear awards. Funds for the resource improvement grants develop consortia for better resource sharing or develop library collections; thus all the projects are similar in scope and title, as well as in funding: more than half receive from \$3,000 to \$4,000.

Table A-5 shows the number of awards and funding levels from 1971 to 1982. More than \$1.5 million was allocated for fiscal year 1980 for 73 awards. The number of awards is considerably lower for fiscal year **1981**, and there is a decrease in both funds and awards for fiscal year 1982: 42 awards totaling \$1,206,000 are scheduled.

Figure A-4.—Distribution of Resource Grants, Fiscal Years 1971=78



SOURCE: National Library of Medicine, Extramural Programs.

Table A-5.—Medical Library Assistance Act:
Resource Grants, Fiscal Years 1971-82
(dollars in thousands)

Year	Amount	Number of awards
1971	\$2,231	469
1972	2,505	372
1973	2,298	153
1974	2,632 ^{a,b}	127
1975	1,469	75
1976	726	43
1977	1,773	66
1978	2,013	52
1979	2,008	78
1980	1,596	73
Subtotal	19,251	1,509
1981	1,641	56
1982	1,206	42
Total	22,098	1,607

^aIncludes Regional Medical Library Grants.^bExcludes interagency agreement of \$27,000 paid with carry-over funds from fiscal year 1973.

SOURCE: National Library of Medicine.

TRAINING PROGRAMS

Currently, Medical Library Assistance Act training grants support graduate level programs in computer technology within the health sciences. The objective is to promote the integration of computer technology with all phases of clinical medicine: teaching, practice, and research.

The focus of the training program has shifted considerably since it was initiated in 1965. Originally, it was to increase the number and quality of medical librarians. In the early 1960's, four distinguished advisory bodies concluded that there was a critical shortage of trained professionals to staff health science libraries and to meet the information needs of the health science community (78). Available resources were clearly not capable of alleviating the shortage; only 10 schools in the country offered even one course in medical librarianship, and just three medical librar-

ies offered post master training programs, with a combined capacity of only eight places each year.

In 1965, Congress authorized \$5 million to train 750 information personnel over a 5-year period. The appropriations were almost at the level of authorization: \$4.5 million were used to establish 20 programs that trained 350 people in medical librarianship. In addition, eight fellowships were awarded to study the history of medicine and biomedical communication. At the end of 5 years, the Director of NLM reported that the program had met many of its goals, but that insufficient attention had been placed on the retraining of employed librarians in modern information handling techniques (37). The Extramural Program staff still considers this a problem, in that an expeditious way of retraining experienced professionals has not been found.

In 1970, Congress concluded that the program had had an encouraging beginning, but had not satisfied the identified need for medical librarians. Thus, it increased training grant funding at a higher level for the next 3 years. However, a 1973 NLM-funded study reported that the training grant program had perhaps produced too many medical librarians relative to the current job market. The study also noted that, at least in some sections of the country, the apparent shortage of the mid-1960's had been largely eliminated (51). Similarly, other studies released at about the same time corroborated the finding that by 1973 sufficient medical librarians were available to meet the needs of health science libraries. There remains, however, disagreement in the library community, especially in graduate programs, over the accuracy of these findings and conclusions.

NLM received these evaluations as indication of the training program's success. The staff of the Division of Extramural Programs note that the Library had not intended to fund long-term training programs, that the Library's justified expectation was that NLM funds would provide only the nucleus for growth, and that the programs would continue with support from academia. In fact, during the 1974 reauthorization hearings, Congress complimented the Library for accomplishing this objective. *

Aside from the supply of medical librarians, NLM's 1972 decision redirecting its program to train health professionals in the application of computer technology to medicine was prompted by a comprehensive report by the Association of American Medical Colleges (AAMC) on medical education technology.⁷

AAMC found that major changes in the current system of libraries, publishing, and medical school curricula required personnel to be familiar with computer technology.

The Library initiated its training grant program in health sciences and computer technology after obtaining the approval of the appropriations committees of Congress. Currently, training grants are designed for health science faculty and potential faculty in the anticipation that their knowledge of computer techniques will be transmitted to the next generation of practicing physicians, researchers, educators, and other health professionals, and that computers will be utilized in solving medical problems. An evaluation of the program is now being designed at NLM.

Appropriations for the training programs are displayed in table A-6. Except for a dip in expenditures from 1973 to 1975, the table shows a gradual but steady increase in expenditures, uncorrected for inflation, from 1972 to 1980. In fiscal year 1980, of the \$1.6 million available, more than half was to cover direct trainee expenses and the rest partially reimbursed the grantee institutions for additional expenses resulting from the training grants. The 1981 budget appropriates \$1.3 million for the support of 10 training programs, and the 1982 budget has \$1 million allocated for continuing nine of these programs.

For the past 3 years, the Library has funded a \$343,000 experimental internship program for library administrators (82). This program was initiated in response to the frustrations of search committees unable to find individuals qualified to be directors of many large health science libraries. The librarians trained in NLM-sponsored and other programs had not yet attained the experience required to direct a large

**Table A-6.—Medical Library Assistance Act:
Training Grants, Fiscal Years 1971-82
(dollars in thousands)**

Year	Amount	Number of awards
1971	\$1,000	13
1972	1,234	15
1973	720	13
1974	901	11
1975	891	9
1976	1,389	13
1977	1,331a	11
1978	1,459 ^a	11
1979	1,472a	10
1980	1,638	10
Subtotal	12,035	116
1981	1,308	10
1982	1,000	9
Total	14,343	135

^aIncludes Council of Library Resources Training Contract.

SOURCE: National Libraw of Medicine.

*U. S. Congress, Senate Report 93-764 accompanying H.R. 11385, Labor and Public Welfare Committee, Apr. 1, 1974.

⁷E. A. Stead, C. M. Smythe, C. G. Gunn, et. al. (eds.), "Educational Technology for Medicine: Role for the Lister Hill Center," *J. Med. Educ.* 46:1, 1971.

library. To date the NLM training program in library administration has produced nine graduates. When measured by the pragmatic criteria of employment, the program has had partial success, as most graduates have been hired as assistant directors or are under consideration for a directorship. NLM is now reassessing the program.

RESEARCH GRANT PROGRAM

In the 1965 Medical Library Assistance Act, Congress proposed to foster research and investigations in medical library science and related fields in the interest of improving biomedical information services. With appropriations of \$6 million for **1965 to 1970**, NLM funded 103 projects concerning the development and evaluation of information activities in libraries, studies in the broad field of biomedical communication, and historical studies of matters related to health and medicine. Because most medical librarians were inexperienced in research, and few of the projects led to applying and implementing new modes of biomedical communication, in **1970** the Director of NLM concluded that such expenditures were among the least rewarding in the extramural program (37).

In succeeding reauthorizations, Congress emphasized that its research interest was in advancing the science of health communications. In 1970, it added an amendment permitting support for demonstration projects for new techniques, devices, or systems that were ready for application, and later added the authority to support projects for the development of new techniques and materials for processing and disseminating health information (Public Law 91-212).

Clinical librarianship, a successful and well-known project funded by the program, was initiated by Gertrude Lamb at the University of Missouri in Kansas City in **1972 (6)**. The clinical librarian provides information services in a patient care setting as part of a patient care team. As part of the team, the librarian is intimately acquainted with the health professionals' information needs. Although the specific functions performed vary with the medical or surgical service and with the medical facility, the basic design is generally similar: medical librarians accompany physicians on daily rounds and attend weekly staff conferences, noting particularly difficult aspects of individual cases.

The librarian then conducts a literature search, using manual and on-line methods, including MEDLARS, selects a few relevant articles, and provides them to the attending physician(s). Clinical librarians often teach courses in information techniques to both students and teachers in medical facilities. Since the initial research and development grant was awarded, the clinical librarian program has been incorporated into **120** medical schools and teaching hospitals (75).

In a similar vein, the Cleveland Health Sciences Library at Case Western Reserve University began the Circuit Librarian Program in **1973**, linking suburban hospitals to its resources. On a regular (usually weekly) basis, medical librarians visit hospitals in surrounding communities, taking information requests from physicians and nurses, ancillary departments, and administrators. Before returning to a hospital, a librarian will have spent time at a resource library filling requests for biomedical and health care literature and audiovisual items. Circuit librarians also assist hospitals in developing in-house collections of core medical literature. The program has been adopted by a number of resource and large hospital libraries, often with NLM grants (10). Many programs, including that of the Cleveland Library, are now self-supporting, with costs covered by the hospitals receiving service.

Although generally considered successful, the research grant program did not achieve all its goals. In 1978, an NLM task force evaluated the program, recognized its many contributions to the biomedical communications process, and applauded the quality of the projects the program supported (131). Nevertheless, the task force was concerned that too few first-rate grant applications were being submitted to the Library to assure adequate advances in the state of the art; that long-range commitments to improve biomedical communications in research and training were lacking; and that potential applicants, staff, and consultants were uncertain about program goals and objectives.

Partially as a result of the recommendations made by the task force, NLM made a number of changes in its research grant program. It now uses four grant mechanisms, similar to those used throughout NIH, to fund research activities:

1. Program project grants—clusters of research efforts having a common focus with coordination by a senior principal investigator.
2. Research project grants—single projects initiated and directed by a single investigator.
3. New investigator research grants—small awards for the young investigator with less than 5 years experience since obtaining a doctorate.
4. Research career development awards—awards providing salary and related support for promising researchers to devote full-time to research for **5 years**.

The last two categories were added to augment the supply of research manpower capable of advancing biomedical communications, and were recommended by the task force.

The Library has identified three areas of interest for these grants: new methods for the representation of medical knowledge; classifying, indexing, and abstracting information; and user needs and behavior.

The task force had indicated the urgent need for research in these areas. However, applicants can propose to conduct research in all the areas identified in the Medical Library Assistance Act, which include medical library science, computer technology, biomedical communications, and the history of medicine and related health sciences.

Another innovation, prompted by the 1978 task force report, is the Computers in Medicine Program, a subset of the total NLM research effort. It emphasizes computer science research in knowledge representation, data base management, and clinical decisionmaking (108). In 1980, Congress designated \$1.3 million specifically for this program. The Library uses the same grant mechanisms in this program as in the entire research grant program. All the current new investigator grants, the research career development awards, and **9 of the 27** research project grants are in this program.

Table A-7 illustrates the funds distributed for the research grant program and the number of projects funded. For 1980 and 1981, the funds stabilized at about \$2.7 million per year and the number of projects remained constant at about 30. In fiscal year 1982, the Library expects to fund 27 projects with \$2.3 million.

SPECIAL SCIENTIFIC PROJECTS

As conceived in the original 1965 legislation, the special scientific grant program was to assist established researchers in reviewing, evaluating, and synthesizing extensive collections of medical literature. The recipient was expected to devote full-time to examining the scientific record in a field relevant to the

established programs, and to produce a thorough, book-length literature review. Although the special scientific grant program has varied little in its 15-year existence, the 1970 legislation changed the funding mechanism from fellowships to grants in recognition of the program's research orientation, and allowed awards to institutions as well as individuals (Public Law 91-212).

The current program supports qualified scientists and practitioners preparing comprehensive analytical and interpretive documents on major health topics. Investigators are expected to bring together dispersed literature in a subject area, or bridge different subject areas, in the health field. In this way, other health professionals obtain easier access to the continuously expanding biomedical literature. In almost all cases, the work produced has a limited audience and as such would not be of interest to a commercial publishing house. Indeed, one of the criteria used in awarding a grant is that the proposed publication be commercially nonviable.

The program was and remains small in respect to the total funds expended in the extramural programs and the number of projects supported. In 1965, it was expected that the \$2.5 million authorization would support approximately 125 medical scholars for the 5-year period. Instead, appropriations totaled \$200,000 and only 10 fellowships were awarded. Although the funds appropriated and the number of awards more than doubled in the next 10 years, they still represented only 41 grants totaling \$1.2 million (see table A-8). There are seven grants totaling \$290,000 scheduled for 1981 and two grants estimated at \$23,000 for 1982.

Table A-7.—Medical Library Assistance Act: Research Grants,^a Fiscal Years 1971-82
(dollars in thousands)

Year	Amount	Number of awards
1971	\$ 590	19
1972	640	24
1973	608	26
1974	875	22
1975	1,292	20
1976	1,353	17
1977	1,180	15
1978	1,111	13
1979	1,593	21
1980	2,724	31
Subtotal	11,966	208
1981	2,774	31
1982	2,257	27
Total	16,997	266

^aIncludes some publication grants awarded with research grants, fiscal year 1971-75.

SOURCE: National Library of Medicine.

Table A.8.—Medical Library Assistance Act: Special Scientific Project Grants, Fiscal Years 1971.82
(dollars in thousands)

Year	Amount	Number of awards
1971	\$ 5	1
1972	100	4
1973	76	3
1974 ^a	95	3
1975	153	4
1976 ^b	72	3
1977	109	3
1978	248	7
1979	214	7
1980	142	6
Subtotal	1,214	41
1981	290	7
1982	23	2
Total	1,527	50

^aIncludes release of fiscal year 1973 impounded funds.

^bIncludes transition quarter funds, July-Sept. 30, 1976.

SOURCE: National Library of Medicine.

Despite the program's moderate funding, the reports accompanying the 1974 and 1978 legislation considered it successful in enabling senior health professionals to analyze and synthesize biomedical literature, and produce and disseminate biomedical publications of a non-profit nature.^{8,9}

There are currently 13 active special scientific projects ranging in size from \$2,160 to \$82,529, and covering a variety of health subjects, including disclosure and consent in medical and legal practice; control of infectious disease in the 20th century; and environmental hazards to small children.

PUBLICATION GRANTS

Publication grants support the preparation and publication of scientifically significant secondary manuscripts—such as indexes, critical reviews, and monographs—to aid health professionals in obtaining relevant literature. The grants are limited and short term, and support projects that NLM believes are important, but whose products attract only a few select readers. These scientific publications are not commercially viable, and have no alternative source of support.

With the uninterrupted growth of published primary biomedical literature, the need for such secondary literature is as pressing today as when the Medical Library Assistance Act was first passed in 1965. At that time, legislators saw a need for supporting publications other than original articles. Interest in this area remained through the five reauthorizations. Although the appropriations were always considerably less than the authorized funding, the report accompanying the 1970 reauthorization congratulated the Library for its efforts and accomplishments in funding the development and publication of over 150 bibliographies, critical reviews, handbooks, translations, and other monographs in biomedical communications.¹⁰

The original legislation clearly differentiated publication grants from special scientific project grants, in that the former were to be awarded only to medical or scientific scholars to synthesize a body of literature related to their particular research topic, and who wished to devote full-time to this enterprise. Publication grants focused on the publication of biomedical information in forms other than journal articles. The lines between the two programs appear to have blurred, and today the emphasis of both authorities is on providing grants for critical reviews. The staff of the Extramural Program Division have a favorable

attitude toward this merging, as they consider the production of critical reviews "one of the major purposes of the extramural programs." Such publications synthesize, and thus provide access to, billions of dollars of biomedical research findings, much of it funded by the Federal Government, primarily through the National Institutes of Health.

The funds appropriated under this authority and the number of grants awarded are displayed in table A-9. Funding increased from \$280,000 in 1971 to a maximum of over \$1 million in 1978. Since then it has decreased, with a 1982 budget of \$514,000. Currently, there are 49 active grants with awards ranging from \$500 to \$111,839.

Regional Medical Library Program

The mission of RMLP is to provide health science practitioners, researchers, educators, and administrators with timely, convenient access to health care and biomedical information resources, through a coordinated network of health science libraries and information centers. Specifically, RMLP's objective is "to assist in the development of a national system of regional medical libraries, each of which would have facilities of sufficient depth and scope to support the services of the medical libraries in the region served by it" (Public Law 89-241). Although RMLP is now organizationally separated from other Medical Library Assistance Act programs, it shares the general objective of improving information services in the health field, and serves as the focus of many Medical Library Assistance Act program activities.

**Table A-9.—Medical Library Assistance Act:
Publication Grants, Fiscal Years 1971-82
(dollars in thousands)**

Year	Amount	Number of awards
1971	\$ 280	16
1972	311	19
1973	389	20
1974 ^a	451	25
1975	614	36
1976 ^b	668 ^c	44
1977	773 ^c	43
1978	1,069 ^c	47
1979	795	36
1980	787	35
Subtotal	6,137	321
1981	818	34
1982	514	19
Total	7,469	374

^aIncludes release of fiscal year 1973 impounded funds.

^bIncludes transition quarter funds, July 1-Sept. 30, 1976.

^cIncludes Council of Library Resources Training Contract.

SOURCE: National Library of Medicine.

⁸U.S. Congress, Senate Report 93-764, op. cit.

⁹U.S. Congress, Senate Report 95-838 accompanying S. 2450, Human Resources Committee, May 15, 1978.

¹⁰U.S. Congress, Senate Report 91-480, op. cit.

When RMLP was originally conceived, the NLM Director recognized a need to decentralize some of the Library's activities into regional arrangements. The inadequate state of medical libraries and the problems in communicating up-to-date information to practitioners and researchers were described in hearings on the need for the Medical Library Assistance Act. Through RMLP, NLM sought (and continues) to encourage strong libraries to share collections and expand services, so that resources will be available *locally* to meet local and regional needs. The program is intended to increase access to the biomedical literature, particularly for health professionals remote from libraries of excellence, through improving immediate resources and developing a network of backup resources, while avoiding duplicating extensive or specialized collections which are not needed as local resources.

NLM implemented the program by awarding grants to libraries with existing resources and regional services that could be expanded without interrupting normal local services. Such libraries serve as a link between NLM and local libraries. As may be expected, most libraries initially designated as Regional Medical Libraries were in academic institutions. Each was to provide seven basic services to the libraries in its region, the most important being the free loan of books and photocopies of journal articles (i.e., document delivery). Other services include MEDLARS searches, traditional or manual reference services, evaluation of regional information needs and resources, training and orientation, publicity about RMLP, and continuing education for health professionals about sources of information.

Document delivery was initially emphasized, especially for the journal literature, because it was the most effective way to meet the program's mission. The specifics of program implementation, however, differ from region to region to match the needs of users and the characteristics of the regional library. Document delivery (or interlibrary loans) remains a fundamental service of the program.

The first grant was awarded in 1967 to the Countway Library at Harvard University, and by 1970 all 10 planned programs had been started. (The 11th regional medical library is NLM itself, which serves the mid-Atlantic region.) In 1970, Congress noted that progress toward developing a large, coordinated, and cooperative program had been "encouraging; the response of the health library community in its efforts to work with this program [had] been enthusiastic."¹¹ By succeeding reauthorizations, Congress has reasserted its appreciation of the program's achievements.

RMLP emerged as a four-tier pyramid, with each tier serving as a backup resource for the one below, particularly for document delivery. At the peak of the pyramid, NLM provides policy and planning at the national level in addition to its backup function. At the next level, the regional libraries implement the national policy, coordinate regional library services and educational activities, publicize the program, and provide backup for document delivery. Each regional library has considerable responsibility and freedom of action in the management of the program in its region. As a result, the program has developed differently in each region to match both the needs of users and the characteristics of the regional library. In all regions, however, the interlibrary loan program has a high priority.

The next tier is that of the resource libraries, which subcontract from the regional medical libraries for some of the services they provide. Currently, there are about 100 resource libraries, located mainly in medical schools. Their major function is to fill interlibrary loan requests from the basic unit libraries, the fourth tier of the pyramid. When one resource library cannot fill a request, it transmits the request to another resource library in its region or to the Regional Medical Library. In addition, resource libraries assist with the coordination of network development and with educational activities.

The basic unit libraries at the base of the pyramid are mainly hospital libraries, although any health-related library is eligible to become part of RMLP. Approximately 3,800 basic unit libraries now participate. Their financial responsibilities were originally limited to only those costs associated with communicating with the resource libraries, but they now pay part of the costs of interlibrary loans as well. Basic unit libraries are an essential element in RMLP because they are usually the entry point to the network for the health professional. In fact, the relationship between RMLP and the other extramural programs authorized by the Medical Library Assistance Act is most evident at this level. As noted earlier, many resource improvement grants have been used to encourage community hospitals to develop collections of text books and journals, share resources, and become active participants in RMLP.

The vertical, pyramid structure of RMLP is organizationally important for the sharing of core biomedical information resources. But as the health sciences' knowledge base broadens, and health care delivery encompasses evermore diverse and specialized subjects from the social sciences, law, and economics, the *horizontal* sharing of resources is becoming increasingly important, especially for the level of sophistication found in the resource and basic unit libraries.

¹¹U.S. Congress, Senate Report 91-480, op. cit.

Rather than looking to libraries above them in the RMLP pyramid, smaller libraries are beginning to tap specialized resources *outside* the pyramid for materials outside the traditional field of biomedicine and unavailable in medical libraries. While not a program objective, this horizontal sharing of resources has been encouraged by the existence of RMLP (27).

Although RMLP has retained the same general objective since its inception in 1965, program format and activities have been modified in response to legislative and administrative demands, user needs, level of each region's network development, and technological change. The 1970 extension of the Medical Library Assistance Act permitted the use of contracts as well as grants for financing the program, and by 1972, all awards to regional medical libraries had been converted from grants to contracts. The contract mechanism was again modified in 1979 according to DHHS regulations to require competitive bidding among regional medical library applicants. Eight institutions were awarded contracts in fiscal year 1980 under this new method; a ninth contract was awarded the following year. The only site change resulting from this new process was in the Midwest region, where the University of Illinois replaced the John Crerar Library as the Regional Medical Library.

In 1972, NLM issued a policy statement that committed the Library to the development of a Biomedical Communications Network (BCN) and described RMLP as the first phase (106). The long-term objective of RMLP was to serve as a model for BCN, which would be designed for information transfer supporting health services delivery, education, and research. Its immediate objective was to develop a document delivery system for the Nation's medical libraries. In 1979, a Library committee reaffirmed RMLP's general objective, but broadened its immediate objective to include encouraging greater resource sharing and providing services beyond document delivery.

A cost-sharing plan for document delivery was also implemented in the RMLP in 1979, based on NLM's belief that local libraries should bear the financial responsibility for documents provided to their primary users. The concepts of the plan were developed in 1970 when the Library determined "that it [was] not wise to base the finding of the entire [Regional Medical Library] network upon appropriated funds." Cost sharing will gradually eliminate NLM's financial commitment to document delivery by October 1982, leaving the Library responsible only for those materials not available in the Regional Medical Libraries and allowing it to support other aspects of resource sharing and the development of better communication links.

Cost sharing has already permitted NLM to decrease its funding level for document delivery from 50 to 25 to 30 percent. Because of the increasing volume of loans along with the rate of inflation and the desirability of having material as close as possible to the requester, the Library concluded that it was essential that local libraries exercise greater fiscal responsibility.

The notion of cost sharing for document delivery services has been controversial since it was first raised in 1970. Some regional libraries now view the plan as a shift on the part of NLM away from funding interlibrary loans and towards funding the development of MEDLARS III, the latest version of the Library's on-line retrieval system. Because MEDLARS III is primarily designed to alleviate the Library's internal burden of managing a growing body of medical literature, these regional libraries see the Library withdrawing support from the Regional Medical Library network at a time when new demands are levied against their resources by small libraries with newly acquired access to MEDLARS.

NLM insists that its reduction in direct financial support for document delivery does not equate with a "reemphasis" of that activity. Further, the Library notes that an important feature of MEDLARS III will be the full automation of interlibrary loan referrals, a development that will eventually enhance document delivery in that it will be easier to identify and locate a bibliographic entity. Further, development costs for MEDLARS III are drawn from the Library's operating budget, not from funds authorized for the Medical Library Assistance Act.

In October 1981, NLM announced a reconfiguration of the Regional Medical Library network, reducing the 11 geographic regions to seven effective November 1982. The proposed change is intended to reduce the administrative costs of the program to make more funds available for program activities, and is in response to congressional sentiments evident in 1981 hearings on the reauthorization of the Medical Library Assistance Act. As library and information services have become increasingly computerized, larger geographic areas have become easier to manage, allowing NLM to consider redrawing boundaries as a more cost-effective mechanism to meet current and anticipated budget constraints (94). Along with the new regions, the Library proposes to establish a national network advisory board, similar to those presently in place in each region. NLM believes this commission will allow users of RMLP's resources and services to be more involved in the program.