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# Republican Scientific-Medical Library, The Republic of Armenia: progress and programs\*

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In 1990, the Republican Scientific-Medical Library (RSML) of the Ministry of Health of Armenia in collaboration with the Fund for Armenian Relief created a vision of a national library network supported by information technology. This vision incorporated four goals: (1) to develop a national resource collection of biomedical literature accessible to all health professionals, (2) to develop a national network for access to bibliographic information, (3) to develop a systematic mechanism for sharing resources, and (4) to develop a national network of health sciences libraries. During the last decade, the RSML has achieved significant progress toward all four goals and has realized its vision of becoming a fully functional national library. The RSML now provides access to the literature of the health sciences including access to the Armenian medical literature, provides education and training to health professionals and health sciences librarians, and manages a national network of libraries of the major health care institutions in Armenia. The RSML is now able to provide rapid access to the biomedical literature and train health professionals and health sciences librarians in Armenia in information system use. This paper describes the evolution of the RSML and how it was accomplished.

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## INTRODUCTION

In 1990, the Republican Scientific-Medical Library (RSML) of the Ministry of Health of Armenia in collaboration with the Fund for Armenian Relief (FAR) created a vision of a national library network supported by information technology. This vision incorporated four goals: (1) to develop a national resource

collection of biomedical literature accessible to all health professionals, (2) to develop a national network for access to bibliographic information, (3) to develop a systematic mechanism for sharing resources, and (4) to develop a national network of health sciences libraries.

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\* Based on a presentation at the Eighth International Congress on Medical Librarianship, London, United Kingdom, July 2, 2000.

training to health professionals and health sciences librarians, and manages a national network of libraries of the major health care institutions in Armenia.

The evolution of the RSML and rapid progress in each of these goals was accomplished by a synergy of support from the Armenian Ministry of Health, the FAR, and strong leadership from the RSML staff. The RSML received several grants from the Eurasia Foundation and the Open Society Institute Assistance Foundation (OSI) enabling it to implement its own library automation system, establish training programs along with computer-equipped training centers, translate Medical Subject Headings (MeSH) into Armenian, and develop an electronic network of health sciences libraries throughout Armenia.† The RSML is now able to provide rapid access to the biomedical literature and train health professionals and health sciences librarians in Armenia in information system use. This paper describes the evolution of the RSML and how it was accomplished.

#### STAGE I (1990–1995)

The initial effort in the development of the RSML as a national library was directed toward demonstrating some level of achievement in each goal area. A strong national library was clearly an appropriate mechanism for improving access to the biomedical literature by Armenian health professionals. The recent independence from the Soviet Union had left Armenia with a fragmented health service and independent and isolated health sciences libraries. The Ministry of Health was developing its leadership in the health practice and delivery arena, so it was natural for the library of the ministry, the RSML, to establish its leadership among the health sciences libraries. The value of a national library was obvious both from the example in the United States of the National Library of Medicine and its National Network of Libraries of Medicine and from the assessment of access to the health sciences literature in countries around the world. Broering edited a series of papers about international health sciences librarianship and noted that the absence of a national library to coordinate services and provide core support was a prominent concern mentioned in every paper [1].

By 1995, significant progress had been made in establishing the RSML as a national library with a significant collection of biomedical literature. The project librarian, Anna Shirinyan, had completed a three-month training program at the Library of the Weill Medical College of Cornell University. The FAR provided subscriptions to about one hundred journals and purchased a small number of current textbooks.

The selections were made by the librarian in the RSML based on areas of health care of primary importance to the Armenian biomedical community. A small collection of medical videotapes provided current clinical information as well as an opportunity for Armenian physicians to practice their English language skills. The collection was available to all Armenian physicians onsite or via photocopies.

A local network of Yerevan hospital libraries was established to provide access to bibliographic information. The hospitals were selected based on their ability to fund their participation, the level of organization of their libraries, and the extent of their scientific and clinical programs requiring access to the biomedical literature. Each hospital had a room to designate as a library and a computer that would be used to email requests for MEDLINE searches, which would be done at the RSML with the results emailed back to the requesting physician. At that time, the RSML had a CD-ROM version of MEDLINE, so all searches had to be done there. In addition to providing access via email to both MEDLINE searches and requests for information, the RSML wanted to automate its library, so that its collection would be available to all health professionals and other health sciences libraries in Armenia. The Ministry of Health Computer Center assigned a programmer to the RSML to support this effort.

The RSML was the major provider of literature from its collection and encouraged hospital libraries in Yerevan to develop their collections in a coordinated way with the RSML. The increased communication among the health sciences librarians improved and increased the use of the collections of the RSML both by delivery of photocopies of articles as well as by visits by physicians, who now knew what was available in the RSML.

The developing network of hospital libraries increased their interaction with the RSML, at first through requests for photocopies from the collection but then in areas of library development such as cataloging practice, library automation, and education. Developing a truly integrated network, however, was difficult given the state of information technology infrastructure in Armenia at this time. To establish a fully integrated network, the hospital libraries needed computers and connections to a telecommunications network that would provide access to the RSML and the Internet. The librarians in these libraries also needed training in using computers and accessing and managing bibliographic information. The development of this network was essential if the RSML was to serve as a national bibliographic search center accessed via telecommunication.

#### STAGE II (1995–1999)

By 1995, significant progress had been made in three of the four goals, and Shirinyan, now the director of

† The RSML's Website may be viewed at <http://www.medlib.am>.

the RSML, returned to the Weill Cornell Medical Library accompanied this time by Tigran Zargaryan, head of the Library Computer Department, a new position partially funded by FAR. The intent of this visit was to develop a new strategy for network development that reflected improvements in information technology and Internet access now available to the RSML and to report on the progress of the library project at the Seventh International Congress on Medical Librarianship [2]. The future of comprehensive support for access to health information was clearly going to require robust Internet access. In countries around the world, access to the Internet had become one of the highest priorities for health professionals, as indicated by the demand for Internet resources by German medical professionals [3]. Most of this visit was taken up with developing a new network and telecommunications strategic plan for the RSML in support of goal 4, developing a national network of health sciences libraries.

Three new objectives for goal 4 were developed: (1) to develop an electronic network of hospital and health institution libraries in Yerevan as well as the branch library of RSML in Gumri, (2) to provide specialized training for the health sciences librarians in the network libraries, and (3) to develop and provide national biomedical bibliographic information. Accomplishing these three new objectives would enable the RSML to achieve goal 4 but required an increase in computer and telecommunications hardware and software along with an increase in general support for the RSML. This increased support was obtained from grants and from FAR.

**Objective 1: to develop an electronic network of hospital and health institution libraries in Yerevan as well as the branch library of RSML in Gumri**

The RSML is a national resource for all Armenian medical libraries and health care professionals. Services are provided through a Network of Medical Libraries (NML) consisting of libraries of hospitals and research institutions. The RSML arranges consultations and training programs for health sciences librarians. Eight libraries in Yerevan and the RSML branch library in Gumri, 120 kilometers away, are connected to the RSML and through it to the Internet. The RSML is connected to the Internet via a two-gigabits-per-second microwave connection. The nine network libraries access the RSML and the Internet via twenty-eight-baud modem connections. At each library, there is at least one computer available for the librarian, and some libraries have additional computers for users. The importance of this developing network cannot be overstated. The future of improved access to the biomedical literature depends upon highly integrated networks of health sciences libraries linked by telecom-

munications to each other and to the Internet. These networks are particularly important in countries that are trying to develop improved resources and access as described by Dimitroff in her review of a network of Russian libraries [4].

**Objective 2: to provide specialized training for the health sciences librarians in the network libraries**

No training on computer use or access to the Internet had been provided to librarians in Armenia prior to this project. As a result, all librarians needed some training, and the RSML decided to begin training librarians from general or academic libraries in Yerevan before beginning training for health sciences librarians. This was done for two reasons. First, the health sciences librarians were not yet ready for training, and the libraries did not yet have their computers and telecommunications installed. Second, developing the course for general librarians would give the RSML staff valuable experience prior to teaching the course to the health sciences librarians.

Because of their experience with computer technology and networking, the RSML was awarded a grant from the Eurasia Foundation to provide this training. Fifty librarians from Yerevan were trained in the RSML between May and November 1996. The course was for one month, and five classes of ten librarians each were taught computer skills, worked with Windows and Word, got acquainted with CD-ROM technologies, and practiced with CDS/ISIS (UNESCO's library information system) software. The lectures also covered MARC formats, AACR, and OCLC. The participants were librarians from the National Library of Armenia, the Academy of Sciences Library, the Scientific Technical Library, the State University Library of Yerevan, the Library of Parliament, and the Childrens' Library. As part of the project, the staff of the RSML prepared a training manual, *Libraries in a Changing World: New Technologies and New Ways of Collaboration*, for this and subsequent classes.

After this first class, it was clear that the RSML needed a better training facility and that the librarians could benefit from additional training. A second grant from the Eurasia Foundation provided funds for establishing such a center and for providing this additional training. The grant provided the RSML with a computer center equipped with five Pentium-chip computers, one HP LaserJet 5L printer, a scanner, a copier, and a fax. Five more computers were obtained for networking the libraries involved in the program. The training center was designed for training the librarians and information professionals in using computer technologies. Fourteen librarians from different libraries represented in the original training class were trained. In this class, they were given instruction in computer applications and systems, networking, tele-

communications, the Internet, data analyses and delivery, and the Web. This training course required a second manual, so the RSML staff wrote *Computer Networks, Internet, and Libraries*.

At this point, the RSML had two training manuals and solid teaching experience, so they developed a third course aimed specifically at the librarians from the regional libraries of Armenia. A third grant from the Eurasia Foundation supported this effort as a logical continuation of the two educational projects they had previously supported. This grant provided computer support for eight regional libraries and training for sixteen librarians from these libraries. The training included basic computer skills, CD-ROM technology, the Internet, and CDS/ISIS software that was provided to them for creating their own local bibliographic databases.

A grant from OSI to develop a computer network of medical libraries included funding for a fourth educational program aimed specifically for the health sciences librarians in the network libraries. The RSML used their computer center and manuals developed for the general librarian training in this specialized training. Thirteen librarians from the nine medical libraries in the network received this training.

### **Objective 3: to develop and provide national biomedical bibliographic information**

Three additional projects, in addition to the training program described above, were implemented in this area all funded by the OSI grant for the computer network of medical libraries. The first was to translate MeSH into Armenian with permission from the National Library of Medicine. An Armenian version of this international standard for subject indexing was important to the RSML and the network of libraries as they began to catalog their collections and index the Armenian literature. It was also a critical foundation for the library automation project that was envisioned.

The second project initiated the automation of the RSML library and the creation of an online public access catalog (OPAC). This project was critical not only for the improved operation of the RSML itself, but also for it to expand its national responsibility. By making its holdings accessible via the Internet, Armenian health professionals and librarians would know what was available from the RSML. The basic library network was created, which connected the departments of the library. The software selected for the automation was IRBIS, developed by the Russian Scientific-Technical library and based on UNESCO's CDS/ISIS. It was a fully featured, sophisticated information-management system using industry-leading technologies. The system had full MARC/UNIMARC implementation with ability to produce and validate records in many MARC formats. Finally, the system fit the local

needs of Armenian libraries at a comparatively low cost. The staff of the library was trained to acquire basic computer skills, understand library system principles, and use the IRBIS system according to the UNIMARC format.

The third project was to begin developing and providing bibliographic access to national biomedical information. The RSML's collection of significant Armenian biomedical information needed to be organized and indexed, so it could be accessed electronically. The first effort was the development of Armenian Medicine, the most important and valuable bibliographic database. It is an index to periodical articles in the medical sciences published in Armenia from 1988 to 1998. A second database, Outstanding Armenian Physicians, is also being developed. The RSML continues to look for additional electronic resources it can develop, including an electronic Armenian medical journal.

### **CURRENT STATUS**

The completion of these three objectives has resulted in substantial progress in the original four goals of the vision created in 1990. The extent of that progress can be seen by a review of those original goals.

#### **Goal 1: to develop a national resource collection of biomedical literature accessible to all health professionals**

The FAR continues to support the collection of biomedical literature by acquiring journals and books in the United States and shipping them to the RSML. This collection is the backbone of the project, continues to be heavily used, and is still the only significant collection of Western biomedical literature in the country. The continued growth of the collection substantiates the position of the RSML as a National Medical Library. The collection is well organized, cataloged, and accessible.

The next step, and the most difficult, is to shift the cost of the acquisition of the collection to the Ministry of Health. This step is still a major problem for countries that are struggling to develop their tax base and their government infrastructure, but it is critical if Armenia is to maintain an effective national medical library network. The minister of health is well aware of this need and has taken the development of a plan of support for the RSML under advisement.

#### **Goal 2: to develop a national network for access to bibliographic information**

With the advent of free access to MEDLINE, the nature of this goal shifted from providing access via the RSML to providing Internet access and support for



individual libraries and health professionals who wish to access MEDLINE. This support has been accomplished in two ways. First, there is now a network of nine libraries coordinated by the RSML. Seven of these have their Internet connection via the RSML, and the others have direct connectivity. Although the routes of connection are different, the nine libraries are a formal network with guidance and leadership from the RSML. Second, the librarians of all of these libraries have been trained in accessing the Internet for information, so they can provide services to their local health professionals. A fully equipped training center has been established, and two instructional manuals have been written by the RSML for this training.

### **Goal 3: to develop a systematic mechanism for sharing resources**

The RSML continues to be the major provider of literature from its collection, but it has encouraged the network libraries to develop and organize their own local collections. In support of this effort, it has provided the network libraries with computer-based cataloging software that is compatible with the cataloging software used by the RSML for its own library automation. In this way, a union catalog of library holdings can be developed. This union catalog will provide information about the holdings of all libraries in the network from any network library. In addition, the RSML has collaboratively developed and hosts a Web page for each institution in the network. These Websites, with a link to the institution's library, reinforce the network and make the network's resources more readily available and accessible. Finally, the RSML has indexed the Armenian medical literature and provided an electronic database of this literature on its Website. The availability of the Armenian medical literature in electronic form is a major accomplishment and improves access to the literature for Armenian health professionals.

### **Goal 4: to develop a national network of health sciences libraries**

The development of a national network of health sciences libraries is substantially in place. Ten hospital, medical university, and institute libraries are members of the network and share resources and access to electronic resources. There are common goals and common activities. Training has been provided to the network librarians, and there is ongoing communication. The RSML has provided the leadership for the establishment of this network and continues to provide that leadership and guidance. While additional effort is needed to extend the capabilities of the network, that effort is resource based, not structural or conceptual.

The concept of a national network, headed up by the RSML is well established and should prevail.

The development of the RSML in just a decade has been outstanding. There has been substantial progress in each of the goals, and the RSML is now unequivocally a national medical library recognized both by the Ministry of Health and the medical library community in Armenia. At the beginning of the 1990s, the information resources of the RSML were paper based only. By the end of the decade, they were paper as well as electronic, including some resources developed by the RSML itself. An electronic network provides Armenian health professionals with access to Web-based electronic resources from a network of ten health sciences libraries. Armenian librarians have been trained in a well-equipped facility at the RSML, and the health sciences librarians have received additional training in cataloging according to UNIMARC, enabling them to create online catalogs.

On the technical side, the RSML has gone from two computers, one laser printer, and email connectivity at 4,800 baud in 1995 to a UNIX server, cache server, and a Cisco router for managing the network. They have a Windows 98 server for managing the library automation project using IRBIS with seven workstations for catalogers, circulation staff, and the OPAC. They have a radio modem connection with full Internet access at two gigabits per second. They have established a public access Internet center in the RSML equipped with five Pentium-chip computers and a training center with seven Pentium-chip computers. A fully developed national medical library has been established in Armenia.

### **FUTURE**

Plans for the future include continuing the existing network development by adding five new libraries and expanding information resources by adding electronic databases. Both of these goals require increasing support from the Ministry of Health. While funding from FAR can continue basic support for the collection for a few more years, the ministry must begin to increase its support in recognition of the RSML's contribution to both the mission of the ministry as well as the health of the Armenian people by improving access to information for Armenian health professionals. Grant funding such as that received from the Eurasia Foundation and the OSI have helped enormously to build the RSML but cannot be depended upon for ongoing support.

The RSML is beginning to explore the accessibility and utility of electronic journals. The literature of biomedicine is moving rapidly to electronic full text, and the RSML needs to develop a strategy for accessing this literature. Improved network connections may be required and increased computing and printing ca-

pability may be desirable. The announcement by the U.S. National Institutes of Health of the implementation of PubMed Central, a database of full-text biomedical literature that will be free to anyone on the Internet, offers a major opportunity for the RSML to explore the value of access to electronic publications. Other biomedical publications are becoming available electronically, making the world's biomedical literature considerably more accessible. Now, the need is for improved telecommunications. The Open Society Institute and EBSCO provide free access to EBSCO's Electronic Information for Libraries Direct, a group of databases of full-text information, in thirty-nine countries including Armenia. Because of its position as a national library, the RSML is well positioned to exploit this resource on behalf of the network.

The leadership and effort of the director of the RSML, Anna Shirinyan, and the information technology support provided by Tigran Zargaryan, along with the support of FAR, have been major factors in this success. In the brief span of ten years, the Republic of Armenia has gone from no substantial access to biomedical information to a well-established, active, national medical library and a network of health sciences libraries providing access to major bibliographic resources and a substantial collection of biomedical literature. As the national medical library of Armenia, the RSML is the logical governmental agency to participate in the global vision recently proposed by the U.S. National Library of Medicine [5].

With the RSML firmly established and with the foundation of the network in place, the future of the RSML as a national medical library now depends only upon the level of support provided by the ministry. To the extent that the support is forthcoming, the RSML will be able to continue its contributions to the support of Armenian health professionals and, ultimately, the health of the people of Armenia.

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*Received June 2000; accepted July 2000*