

From information jungle trails to superhighways for health caregivers in the Pacific

Micronesia has very sparse local library services but this is improving. For those libraries with any health science collection, only paper indexes might be available which provide limited search capabilities. Some now provide regional access to knowledge-based information in the health sciences literature with the Guam Medical Library (NHGU Library) staffed by a certified medical librarian. Over the past two decades, the authors, librarians at the NHGU Library and the RFK Library, initiated expanded and timely access to biomedical information for health professionals throughout the Pacific region. Now, health caregivers in the Pacific may affiliate for Loansome Doc service by simply contacting the NHGU Library. In 1996, with the support of the University of Guam, the RFK Library became an NLM resource library and actively began working with the Pacific Southwest Regional Medical Library Service (PSRMLS) of the NLM to provide expanded service to isolated health caregivers in Micronesia. Moreover, NHGU Library belongs to a loose network of (US) federal and Department of Defense libraries that share information and copies of articles among themselves for no cost. In this way medical services can now readily access a wider network of health information.

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decision making and have suggested that early reference to literature databases may also contribute to reduced health care costs⁵."

Introduction

No decision can be any better than the information used to reach it. In United States medical practice, the term *knowledge-based information* (KBI) is used to describe the supporting information provided through libraries to help in decision making. Defined as a collection of stored facts, models, and information that can be used for designing and redesigning processes and for problem solving. ... [it] is found in the clinical, scientific, and management literature¹. In recognition of this, in the United States (US), the National Library of Medicine (NLM) has done significant work for the past several decades in bringing essential knowledge-based information to medical, nursing, allied health professionals and the public at large throughout the world. In 1995, Dr. Donald Lindberg, Director of NLM in citing previous studies by Marshall, et. al² Klein, et. al³ and himself⁴ wrote:

"Studies have demonstrated the utility and importance of searching the medical literature in clinical

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With the phenomenal growth of telecommunications capabilities and the support of NLM, federal and local governments cooperating with professional associations, information access and services to doctors and allied health providers throughout the entire Pacific region has thrived. This growth has significantly lessened the longstanding barriers of distance, time and cost in accessing biomedical literature by health caregivers in the Pacific islands.

In the Pacific island groups just north of the equator in the Western Pacific Ocean, known as Micronesia, there are only two consistently maintained and updated libraries with significant medical and allied health collections. These are the United States Naval Hospital, Guam Medical Library (NHGU Library) and the University of Guam Robert F. Kennedy Memorial Library (RFK Library), both of which have played an important role in

this development. Among the services these libraries provide is regional access to knowledge-based information in the health sciences literature.

In the past, access to this body of information was done only with careful development of print textbook and journal collections; however, for Pacific Islanders, collections like these were almost completely unavailable. Today, access to this information is done using a combination of modalities, including telecommunications technologies for electronic access, developing personal relationships and networks, as well as the support of print collections. This paper will describe the challenges faced and the efforts to address the information needs of Pacific islands caregivers within this context.

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Challenges facing health caregivers

In the early 1980s, there were few library collections with health sciences materials in the entire Pacific and rarely any regular contact between the people managing them. The NHGU Library was the only Micronesian health sciences library with a certified medical librarian. A health caregiver faced a long and often fruitless search to find articles that might be pertinent to a specific patient care question. Then, even if they could locate the existence of an article, they were still faced with the task of acquiring a copy.

Many other challenges faced the health caregiver including the astoundingly sparse local libraries and library services. For those libraries with any health science collection, only paper indexes might be available, providing limited search capabilities. The vast distances between existing libraries; the slow postal service using airplanes, container ships and small boats to transport materials (with varying luck at keeping it dry in transit); and the high cost of telephone and facsimile transmission made the situation even worse. Moreover, all libraries in the Western Pacific are government funded and there was, and still is, little financial support from their respective governments.

The few libraries in the region that existed only offered access to the sparse materials in their own collection. At times, an individual librarian might try to get a copy of a book or article from outside their island, but it was very hit or miss (mostly miss) and often the material took months to arrive. These problems meant only a very few of the many questions that turn up in a typical health caregiver's day were answered with published literature.

Another complication is the profound geographic distances and lack of human networks facing health caregivers working in the Pacific region. These challenges were summed up by Yvan Souares, in an article appearing in this journal where he states, "These islands are scattered over 30 million square kilometers of the Pacific, an area almost four times that of Australia. Ninety-eight percent of that area is water, leaving a total land area only half that of the Northern Territory of Australia. For seven million Pacific people, the development of human networks in these conditions is both a challenge and a prerequisite to socio-economic development."⁶ The authors would add access to telecommunications technology as both a challenge and prerequisite, as well.

Lastly, to make this even more complex, not only are the islands of the Pacific spread over a large geographic area, but each island group has its own unique culture, language and government structure. As well, the US Navy has its own

culture, regulations and procedures that further complicate matters.

From then to now

To address these challenges and unmet needs, over the past two decades, the authors, librarians at the NHGU Library and the RFK Library, initiated expanded and timely access to biomedical information for health professionals throughout the Pacific region. This came about following the introduction of microcomputers and the development of telecommunications capabilities throughout the Pacific islands. These milestones provided the foundation for access to electronic mail, the Internet and enabled online searching of databases, including MEDLINE; the National Library of Medicine's bibliographic database for the biomedical literature of the world (also known as *Index Medicus* in paper format.) Within this context, the authors began to promote electronic access to medical and allied health resources, educated health

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Prior to 1985, when someone using the NHGU library wanted an automated literature search of *Index Medicus*, a search request form was completed and mailed to Tripler Army Medical Center Medical Library in Honolulu, Hawaii. The search was done online in Hawaii, printed in Washington, DC at the NLM and mailed to Guam, often taking 4-6 weeks to arrive. In 1985, with access to the military's telecommunications network, the NHGU began direct online searching of the MEDLINE database in Washington, D.C., the only library in the region using this capability. In 1987, Grateful Med, a user-friendly microcomputer search tool was introduced, promoted to encourage end-users to search MEDLINE directly online. End-user searching, the independent, direct searching in a variety of online databases by the health caregiver, allows individuals to quickly find knowledge-based information pertinent to their clinical questions. However, because of the high cost, low speed and unreliability of the access, few end-users in the Pacific were able to take advantage of this online access. It must be added that NLM also issued MEDLINE on CD-ROM's, although by the time the CD-ROM's arrived, they were several

months out of date.

In the early 1990's, the World Wide Web began and NLM moved their end-user software to the Internet. The interface was first called Internet Grateful Med?, to capitalize on their earlier outreach work with Grateful Med. Later, in conjunction with the NLM National Center for Biotechnology Information, PubMed <<http://pubmed.gov/>>, an easy to use MEDLINE search tool and a number of other databases was developed. In June 1997, to enable greater access to health information, PubMed became cost-free to anyone searching the databases and usage jumped about 10-fold to a rate of 75 million searches annually.⁷

With the development and widespread access to electronic databases to locate journal articles, the desire for faster access to the full text of journal articles escalated. Waiting a month or two for a copy of an article became intolerable. To address this need, in the early 1990s, NLM added Loansome Doc <<http://wwwcf.nlm.nih.gov/loansome/login.cfm>>, a service allowing end-users to order full text copies of the articles found through searching MEDLINE. By making arrangements to affiliate with a Loansome Doc participating library, such as the NHGU or the RFK Library, end-users can easily use the service. In the early 1990s, NLM added Loansome Doc <<http://wwwcf.nlm.nih.gov/loansome/login.cfm>>, a service allowing end-users to order full text copies of the articles found through searching MEDLINE. By making arrangements to affiliate with a Loansome Doc participating library, such as the NHGU or the RFK Library, end-users can easily use the service. Health caregivers in the Pacific Islands may affiliate for Loansome Doc service by simply contacting the authors.

Once an article is ordered, the Loansome Doc program automatically routes an electronic message requesting a copy of the article to the user's affiliated library. Within minutes, the library can either fill the request or quickly forward it to a pool of other libraries in the network — in Micronesia or half way around the world, having large or small collections, and some even willing to provide copies cost-free. Using Loansome Doc, the order is completed in a few quick steps from any computer with Internet access and a Web browser — any day, any time! Gone are the librarian's former irritating chores of deciphering cryptic notes written at 3am, half remembered spelling of a possible journal title, and the inevitable transcription errors.

Although these exciting innovations were available, only a scant number of requests from Micronesia had been made to NLM and few individuals at NLM realized that people in the region were eligible for their services. With this easier access to PubMed, and an increased demand for services by users in Micronesia, NLM was prompted to include the Micronesian island nations in their service area, thanks to the efforts of the NHGU Library. In 1996, with the support of the University of Guam, the RFK Library became an NLM

resource library and actively began working with the Pacific Southwest Regional Medical Library Service (PSRMLS) of the NLM to provide expanded service to isolated health caregivers in Micronesia. Then in 1998, the RFK Library experimentally redefined their user region in terms of resource sharing from just Micronesia to include all islands falling under the umbrella of the Secretariat of the Pacific Community (SPC), formerly the South Pacific Commission, located in Noumea, New Caladonia <<http://www.spc.org.nc/>>. With the support of both the RFK Library and the NHGU Library, this experiment continues and has provided greater accessibility and lower costs to users.

Again, in 1998, the speed and legibility of copies of articles was improved for our users when both libraries acquired digital scanners and Adobe Acrobat software. With this software, Portable Digital Format (PDF) files of articles can be made, attached to an E-mail message and sent to the requester. The NHGU and RFK libraries can now receive a request via Loansome Doc, E-mail, telephone or FAX and if all the pieces are in place, the requestor receives a copy within as little as 15 minutes. These pieces include the library subscribing to the journal, the issue on the shelf, the copier and the scanner working, and Internet access available. More likely, requests are usually completed in 3 to 5 days.

The ease of searching and subsequent speed receiving articles fed an increasing demand for the services. This was demonstrated in the dramatic growth in requests to NHGU Library for copies of articles from other libraries which went from eleven in 1984 (before computer access) to 437 in 2001. That same kind of growth was seen by the RFK Library. In 1996, the RFK Library received 62 requests, almost entirely from University of Guam faculty and students. In a paper presented in August 2000, the statistics cited for requests handled as the resource library were: from June 1998 through March 2000, a total of 314 Loansome Doc and DOCLINE requests coming from patrons in Guam and several regional libraries including those on the islands of Pohnpei, Palau, Fiji and New Caledonia were received and filled. In the first year [that we provided electronic delivery], from June 1998 through May 1999, there were 91 requests; however, as the word spread and area health professionals were trained, the numbers soared so that from June 1999 through March 2000, the ILL department received 223 requests.⁸ This growth has continued and in 2001, the RFK Library completed 554 requests coming from both University of Guam and regional end-users

Modalities for knowledge-based information support

In an effort to provide training, cost effective and/or cost free access to literature, and development of human networks to support health caregivers, several modalities have emerged in the Pacific during the past decade.

One of the driving forces behind this expanding access to health sciences information had its beginnings in the early 1990's when the Pacific Islands Association of Libraries and Archives (PIALA) was established. PIALA identified medical and allied health professionals within the region as one of the many groups of users with serious unmet needs and found a partner in the RFK Library to address these needs. The RFK Library took the lead in developing cooperative relations with NLM, the National Network of Libraries of Medicine and the PSRMLS.

With the increased emphasis on the safety, quality and effectiveness of health care, the need for evidence-based medicine and access to biomedical literature has become increasingly significant.

During the past several years, the Pacific Basin Medical Association (PBMA) also became active in improving access to the biomedical literature. To this end, PBMA budgeted funds and created a deposit account at the RFK Library to underwrite the use of Loansome Doc for their members.

To lower the cost of resource sharing, both NHGU and RFK Libraries are members of FreeShare <<http://nlnm.gov/libinfo/docline/freeshare.html>>; a consortium of health sciences libraries that provide copies of articles to each other cost free. Moreover, NHGU Library belongs to a loose network of (US) federal and Department of Defense libraries that share information and copies of articles among themselves for no cost. Working together, we provide many of the articles requested for patient care needs at no cost to the requester.

Most recently, in an effort to bring knowledge-based medical information resources to the physicians and nurses in local Micronesian hospitals, the Seattle based University of Washington WAMMI Center for Health Workforce Studies has begun a print collection development project through their Pacific Islands Continuing Clinical Education Program (PICCEP). Through this project, they are providing core medical textbook collections to eleven regional hospitals in the US-associated Pacific jurisdictions.⁹

Summary

With the increased emphasis on the safety, quality and effectiveness of health care, the need for evidence-based medicine and access to biomedical literature has become increasingly significant. As telecommunications and access technologies have developed, health caregivers throughout the Pacific region are now using automated tools to more quickly access knowledge-based information, better informing their patient care decisions. In the past, any literature searching in the Pacific was done for solely for background information, with little hope of obtaining the actual articles in a timely fashion. Now, as it is easier to find pertinent articles, literature searches are routinely used for current clinical questions, basing practice more on evi-

dence/science rather than anecdote/art.

New innovations and partnerships make it easier for the NHGU and RFK libraries to provide more efficient and effective access to a myriad of health sciences resources to regional users. Widespread access to the Internet and World Wide Web has led to the need for more and better library services. Using electronic mail, PubMed and Loansome Doc, libraries can provide the entry point to timely, focused knowledge-based information, helping caregivers and patients make informed healthcare decisions, leading to better outcomes and use of limited resources.

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