DOCUMENT RESUME

ED 138 234 IR 004 414

AUTHOR Maguire, Carmel; Lovelace, Eugenia
TITLE The Information Needs, Usage and Attitude of Medical Researchers in Australia: Strategies for the Provision of More Effective Medical Information Facilities. Second Report to the National Library of Australia.
INSTITUTION New South Wales Univ., Kensington (Australia). School of Librarianship.
SPONS AGENCY National Library of Australia, Canberra.
PUB DATE 75
NOTE 61p.; For related document, see IR 004 415

EDRS PRICE MF-$0.83 HC-$3.50 Plus Postage.
DESCRIPTORS Foreign Countries; Information Dissemination; Information Networks; *Information Services; Information Systems; Institution Libraries; Interlibrary Loans; Library Collections; Library Education; Library Instruction; Library Materials; *Library Planning; Library Research; Library Standards; *Library Surveys; *Medical Libraries; Medical Research; *Pilot Projects; Regional Programs; Research Projects
IDENTIFIERS *Australia; Australia (New South Wales); Australia (Queensland); Australia (Victoria)

ABSTRACT

An initial survey of medical information resources in New South Wales, Queensland, and Victoria, Australia, reveals a lack of adequate collections, insufficiently trained staff, few formal lines of communication between service providers, and paucity of mechanisms to ensure user awareness of available services. Detailed proposals are provided for six pilot studies intended to provide more extensive information to guide regional medical information resource planning in Australia. Studies proposed are (1) information flow in hospitals, (2) core collections for Australian hospital libraries, (3) design for a course for hospital library clientele, (4) design for a course for untrained hospital library staff, (5) experimental regional inter-library loan center, and (6) experimental regional information unit. The bibliography contains 90 items related to medical information services planning. (STS)

THE INFORMATION NEEDS, USAGE AND ATTITUDES OF MEDICAL RESEARCHERS IN AUSTRALIA: STRATEGIES FOR THE PROVISION OF MORE EFFECTIVE MEDICAL INFORMATION FACILITIES

BY

Carmel Maguire

and

Eugenia Lovelace

SECOND REPORT TO THE NATIONAL LIBRARY OF AUSTRALIA

School of Librarianship
University of New South Wales
February
1975

PREFACE

This project is a continuation of the work reported in The Information Needs, Usage and Attitudes of Medical Researchers in Australia: a preliminary investigation, which was the investigators' first report to the National Library of Australia under a research grant held from March to September 1974. The National Library supported the work reported in this study with a further grant of $4,015 which allowed Eugenia Lovelace to be employed as a research assistant in the School of Librarianship of the University of New South Wales for the period October 1974 to February 1975.

The investigators have in this, as in their earlier study, been assisted generously by many people - by users and suppliers of medical information in Australia and abroad, by their colleagues in the School and by no means least, by the staff of the National Library of Australia.

The writers' hope is that the suggestions embodied in this report will contribute quickly to discussion and experiment in the provision of more effective information services for Australia's health sciences community.

Carmel Maguire

Eugenia Lovelace

TABLE OF CONTENTS

The brief for this study was as follows:

(i) Complete study of all the MEDLARS users in New South Wales who had agreed to co-operate in the Preliminary Investigation; add these findings to that investigation's data and relate them to evidence from other countries;

(ii) Prepare detailed proposals for strategies by which present MEDLARS users may make more effective use of the Biomedical Information Service evolving at the National Library of Australia and by which awareness of available information services may be increased in the Australian medical community generally;

(iii) Prepare a submission regarding a study of hospital libraries in Australia and of the larger medical libraries which might act as regional resource libraries for them.

In carrying out the study, it was unfortunately not feasible to complete the first section of the brief. Serious interruptions have occurred in the output of both SDI and retrospective search data from the Australian MEDLARS data base because of software problems encountered in the changeover of the files to MEDLARS II format. The investigators judged that in this period the reactions of MEDLARS users to the service could only be prejudiced by the interruptions and delays in receipt of output, that data collected would be of doubtful validity and that it would be better to save up for later, as it were, these potentially co-operative users.

In pursuing items (ii) and (iii) in the brief, the investigators have derived much help from the experience of the Regional Medical Library Programs in the United States as reported in their publications which have been made available to us by the Regions and by the National Library of Medicine. These publications are useful not only for the information they contain regarding new services, but also for the information, conveyed sometimes obliquely, regarding the problems encountered in developing medical library and information services. Helpful and informative contacts have also been made in correspondence and in person. The dangers of attempting to apply overseas models to the Australian situation without due regard to local conditions are very real. Yet the United States experience in planning and implementing regional medical information networks offers at least a point of departure for the strategies proposed in Section III of this report. The fact that not nearly enough is known about present conditions, attitudes and resources in Australia is amply demonstrated in Section II of this report. So is the disturbing fact that, though embryonic, a good deal of largely unco-ordinated work has been begun by a variety of agencies, each attempting to improve those aspects of the medical information problem which most nearly impinge on their activities.

In pursuing this investigation, discussions have been held with the Medical Librarians Group (Victorian Branch), and with hospital librarians, university medical librarians, librarians of professional medical associations and librarians of health-related government departments in New South Wales and Queensland. Contacts have also been made with other providers of medical information, for example, with those operating hospital-based drug information services.

This model is taken from the Winter 1973 issue of Resources which is the newsletter of the Midwest Regional Medical Library in the United States. The Midwest Region reported that they had found the model a useful framework to assist in the methodical analysis and planning of regional information services. It is interesting to notice in the Autumn 1973 issue of Resources the report that while the National Library of Medicine's Review Committee, after its site evaluation visit in July 1973, had noted the strength of the Region in terms of personnel and collection resources, it had also stated that "Development of an effective regional administrative plan ... was regarded as essential in order to realise a greater potential of localised strengths". The investigators have also found the model useful and suggest a guide such as this could well be used in Australian planning whether at local, regional or national level.

The form of this report is based largely on the model. As has been said, data collected are incomplete and thus the discussion is intended as a guide to the types of data which should be collected and the type of questions which should be answered and considered in national studies. Throughout the report tentative plans are presented and these are to be seen as prospective pilot projects or experiments that might be implemented immediately in order to assess the feasibility of their introduction on a larger scale.

The data collected are incomplete in geographical coverage, in depth of detail and are not strictly comparable among the various libraries. This is partly due to constraints of time and resources under which the investigators operated and partly due to inadequacies in current data-collection policies encountered in various organisations. The analysis of the present situation is thus, as it were by definition, inadequate.

The investigators make no claim that the impressions and data collected in their excursions could be assembled into a statistically reliable picture of the Australian situation as a whole. They contend however that from these data can be sketched at least the outlines of the present situation and that ways of filling in the details and the priorities for doing so can be suggested. They also contend that experience elsewhere can be used to point albeit crudely some indications of the likely effectiveness of alternative strategies in relation to the resources they would consume.

Basic to this study is the premise that a medical information service should ensure access to medical information to all the members and students in all the professions which make up the health sciences community. To supply the library component of this objective the following are needed in Australia:

(i) health science libraries in local areas to serve the continuing information needs of the local health sciences community;

(ii) lines of communication and co-operation at a state level among health sciences libraries;

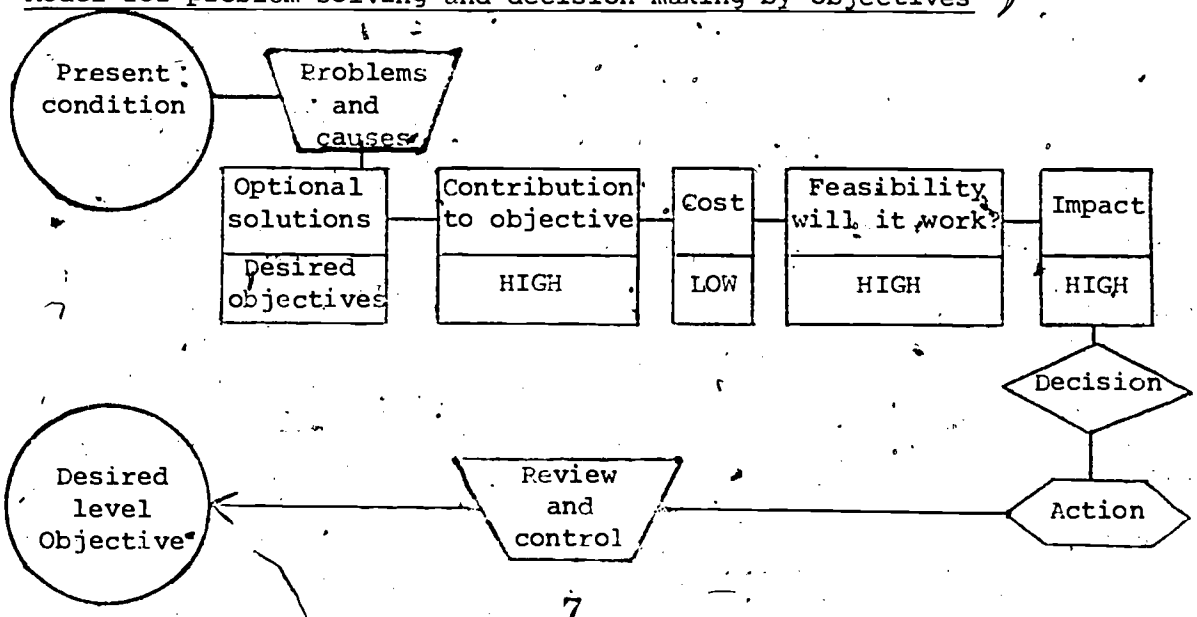
(iii) lines of communication and co-operation at a state level between health sciences libraries and other libraries and information services;

(iv) a communication process among libraries at a state level and at a national level and between libraries and other providers of biomedical information;

(v) a mechanism to ensure awareness among users and potential users of their information needs and of the services available.

In preparing this report the investigators have used the following model:

Model for problem-solving and decision making by objectives



II PRESENT CONDITIONS - Problems and Causes

(i) Background

As far as the investigators can ascertain there has been no systematic survey of Australian hospital library resources. However, data which have been made available to the investigators from a recent survey by the Health Commission of New South Wales indicate that outside of the Sydney metropolitan area a hospital library is the exception rather than the rule. Prior to discussing insights gained from this survey and from discussions with librarians in various States, it might be helpful to bring to mind some of the current thinking on the role of the hospital library and on appropriate standards and objectives.

There are, unfortunately, no Australian standards for hospital libraries. There are Australian Special Library Standards (70) but none specifically designed for the Hospital library and the type of use patterns likely to be present. Some beginnings are being made, such as the basic lists of books and journals for small hospital libraries compiled by the Medical Librarians' Group (Victorian Branch) (45;46). The investigators feel that a set of realistic, costed, detailed standards and objectives perhaps compiled by or carrying the approval of the Medical Librarians' Group would be of great use in persuading hospital administrators and others of the need for adequate hospital libraries. It has been said in verse:

> "Since your overriding purpose is to serve your readers' needs,
> A set of clear objectives is a method that succeeds.
> This set of clear objectives should precede your operation
> And provide a very useful tool for self-evaluation."
> (Nermls News, 16 December 1974, p.2) (57)

Due to lack of local material the investigators have had to look overseas for standards and objectives against which to compare Australian hospital library facilities. That the environment of the hospital and of medical practice is broadly similar in the United States and in Australia is indicated in the following quotation from Rees and Berger, writing of the US scene:

> "The rapid institutionalization of medical practice, the rise of specialization, the increasing dependence of physicians on each other, on allied personnel and on expensive, specialized equipment have required that the physician use more extensively the resources and facilities of the hospital. The decline in the number of general practitioners has fostered a team approach to health care which requires co-ordination of the physician, a variety of specialities and an ever-increasing number of allied health personnel ... Since no health professional ever learns all there is to know, continuing education is ... of major importance within the hospital setting. The rapid growth of knowledge and the introduction of new techniques render previously acquired skills out of date long before the career of the practitioner is completed. Life-long learning is necessary and the hospital is the logical and convenient locale for it ... The library exists to provide information in support of the hospital's three major functions: patient care, education and research." (10:52).

The first major survey of professional hospital libraries in the United States was carried out in 1962 by the American Hospital Association (30). They defined a "professional" library as "a collection of books,

journals etc, relating to medicine, health sciences, and hospital operations that could be used by medical and house staff, students and other hospital personnel". *(30:55)* For the purposes of this report the investigators have accepted the above as a workable definition thus excluding libraries for patients, departmental collections available only to limited personnel and so on, from being comprehended in the term "hospital library".

At the time of the survey there were 5,444 non-federal, short-term hospitals registered by the American Hospitals Association. Of these a disproportionate random sample* of 724 hospitals was surveyed and the data so obtained were then used to estimate the characteristics of the 5,444 registered hospitals. Not unsurprisingly hospital bed capacity was the major correlate of library-size: data were also categorized according to geographic region but "it was found that the greatest differences were not regional but rather among hospitals of the various sizes". *(30:55)* Table 1 below shows the estimated number of hospitals with and without libraries grouped according to hospital size. *(30:56)*

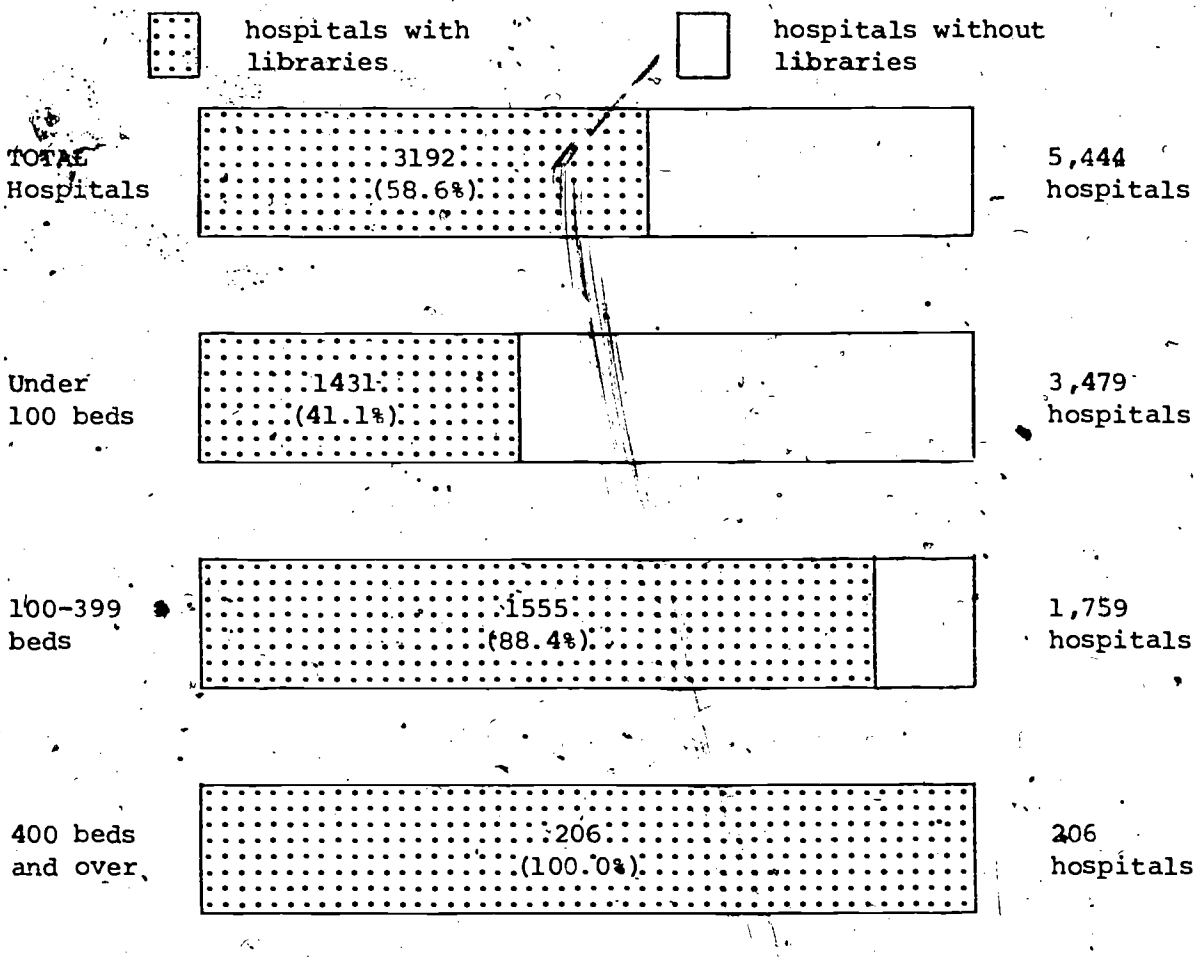


TABLE 1 Projected number of hospitals with professional libraries

It was found that the average hospital library held 561 books;

* ie, the sample was selected to contain a greater proportion of larger hospitals.

libraries in hospitals with fewer than 100 beds held an average of 158; libraries in hospitals with more than 400 beds held an average of 2,657 books. On an average it was found that there was slightly less than one-third of a full-time employee and not quite one part-time employee per hospital library. The conclusion of the survey was "that vast improvements in holdings, staff and services must be achieved". *(30:57)*

The 1971 Accreditation Manual of the Joint Commission on Accreditation of Hospitals requires that "Library services shall be made available to the medical and hospital staff. There shall be books, periodicals and other materials appropriate to meet their needs". *(37:131)* The interpretation accompanying this standard lists a minimum of three services that should be provided, namely:

> "Reference service. The ability to suggest references and sources of information, as well as the ability to find facts within a reasonable period of time.
>
> Document delivery service. The ability to respond to a reasonable request, either to produce published matter from the library's own collection or to acquire it from source libraries. Procedures should be developed for lending library materials, for accurately controlling loans and for filling photo-reproduction requests.
>
> Audiovisual service. The ability to provide audiovisual material and equipment." *(37:131)*

Standards are not given for collection size, seating space and so on: the emphasis is on service which "should be active, dynamic and capable". *(37:131)*

More detailed standards are available from various sources. For example, The Library Association states for the United Kingdom that whilst the size of the collection will depend partly on the size of the hospital and the proximity of other medical libraries, yet "Whatever the size of the hospital, certain basic library needs exist". *(41:12)* The Association recommends that "at least 250 [periodicals] should be taken in regional libraries and 50-100 in district general hospitals". *(41:12)*

Some of the Regional Medical Programs in the United States have produced quite detailed standards: for example, the recommended standards set by the Connecticut Regional Medical Program, 1970 are presented in Table 2 below. *(20:21)*

Size of hospital	Up to 200 beds	200-400 beds	400-600 beds	Over 600 beds
Book collection	100	300	500	600
Annual book additions	30	50	80	100
Current journal subscriptions	40	60	100	150
Seating	Ten percent of total hospital staff			
Library Staff	1/2 (20 hours per week) employee	1 full-time employee, 1/2 clerk	1 prof'l libr'n, 1 clerk	2 libr's 1 clerk

TABLE 2 Connecticut Regional Medical Program-Hospital library standards

There are also many core lists of monographs and journals available as a guide to collection size and to collection building. (See for example, *8, 12, 13, 26, 45, 46, 53, 74*).

The investigators are not suggesting that rigid standards should be set for the number of monographs and journals per hospital bed, nor that these should be selected from a given list of titles. Swinscow(75) has summarized excellently the dangers inherent in such an approach and emphasized the need to create a collection tailored to the specific information needs of the hospital, the extent of availability of material in easily accessible libraries and the hospital budget.

This is not to say, however, that formally enunciated standards and objectives have no value as guidelines against which to measure the adequacy of library facilities. For example, a New South Wales base hospital with 216 beds reported to the New South Wales Health Commission Survey that it had a library of 130 monographs and 6 current journal titles and it named the British Medical Journal as its other source of medical information. This hospital has obviously not developed its library facilities against any realistic perspective of the range of materials and services a library in such an environment could or should offer.

The aspects of medical information facilities investigated in New South Wales, Queensland and Victoria are reported below.

(ii) Medical Information Facilities: New South Wales

There is a variety of sources of medical information in New South Wales. The university medical libraries directly serve the educational and research requirements of the medical schools; indirectly they serve the continuing education and research needs of medical practitioners and others in various environments. The Biomedical Library of the University of New South Wales holds approximately 15,000 monographs and 1,500 current journal titles; the Medical Library of the University of Sydney holds approximately 61,186 bound volumes and 1,784 current journal titles. Allied with these two libraries are the libraries of the affiliated teaching hospitals. Some of these have quite extensive collections. For example, Sydney Hospital (403 beds), affiliated with the University of Sydney, holds approximately 6,000 monographs and 425 current journal titles, as well as possessing a collection of approximately 200 sound tapes. Others of the affiliated hospitals are relatively small. For example, the Womens' Hospital, Crown Street (292 beds), holds approximately 350-400 monographs and 30 current journal titles.

Other information sources centred in or affiliated with universities include services provided by the Post-Graduate Committees in Medicine. For example, from the University of Sydney there is the Post-Graduate Committee's Ausio-Visual Newsletter, radio broadcasts, and the Coppleston Postgraduate Medical Institute's "Landline Network".

The libraries of the professional bodies, such as the Australian Medical Association Library (Sydney), provide another source of information. Directly these provide a service to their members; indirectly, however, through the inter-library loan network they service a much wider community.

Hospital libraries are generally the responsibility of their respective hospital boards. Some exceptions are the libraries in affiliated teaching hospitals which are partly funded through Universities Commission

(formerly Australian Universities Commission) grants, and the libraries in psychiatric hospitals which are the direct responsibility of the Health Commission of New South Wales. The Commission's Library circulates its Accession List to all hospitals and provides an inter-library loan service if it is requested. There are also a few repatriation and rehabilitation hospitals which are the responsibility of Federal agencies.

The hospital based information services are another source of information. For example, the Poison Information Centre at the Royal Alexandra Hospital for Children and the Riverina Regional Hospital Pharmacy Information Service.

The Federal Department of Health is also a source of information providing publications such as Pharmaceutical Benefits (a list of drugs which may be prescribed under the National Health Scheme). The Department is also said to be planning to compile and publish drug profiles for the use of pharmacists and prescribing doctors.

Theoretically, there is also access to national resources via the inter-library loan network. There is, again theoretically, access to the resources of ANSTEL. There is fee-paying access to the physical collection through the recently introduced photo-copying token system, and free access to the bibliographical data contained in computerized data bases, such as MEDLARS and BA Previews. In a separate category there are the information services of the pharmaceutical industry.

Among these various sources of information there appears to be no formal co-ordination or lines of communication. Most importantly there is no central point from where the potential user can be alerted to the multiplicity of sources available. Some random examples may be the most effective way to bring out the problems of accessibility and awareness with which the present conditions in New South Wales are beset.

There is no union catalgoue of library holdings. There are no attempts to co-ordinate binding schedules. A survey conducted by the investigators *(43)* indicates that many university affiliated medical practitioners are unaware of the services provided by the Post-graduate Committees, the survey also indicates almost total ignorance by potential users of the National Library services which are now channelled through ANSTEL. Inter-library loan transactions between the Australian Medical Association Library (Sydney) and the Biomedical Library of the University of New South Wales are conducted on an item by item basis with the AMA Library charging for photocopying and the Biomedical Library providing a free service. Of the 200 hospitals and health-related organizations in New South Wales only 48 indicated that they utilized the inter-library loan network in response to the question, "Do you have ready access to any other source of medical books, journals and information?" If one excludes organizations in the Sydney metropolitan area the number drops to 16 out of 137.

To turn specifically now to hospital libraries an analysis of the data derived from the survey conducted by the Health Commission of New South Wales indicates not only lack of awareness of other sources of information, but also lack of adequate collections locally and especially the lack of trained staff.

New South Wales Health Commission Survey: A total of 200 organizations were represented in the survey data analyzed by the investigators utilizing the programmes in SPSS: Statistical Package for the Social Sciences on the

University of New South Wales' IBM 360/50 computer. The data were made available to the investigators by Mr D Hunt, the Librarian of the New South Wales Health Commission, from a survey conducted in December 1974. Questionnaires were received by hospitals, by Regional Offices of the Commission* and by one medical school library in New South Wales.

Not all respondents completed all items and some items elicited ambiguous responses. Thus, in discussing survey results reference will be made to the number of instances reported, rather than percentages when there is less than a 100% unambiguous response rate. Only items that elicited meaningful responses on topics within the scope of this report are discussed.

Of the 200 organizations 70 (35%) did not hold any medical books and 97 (48.5%) did not receive any current journal titles. Only 59 respondents had a separate room set aside as a library: 140 did not have a separate room. To the question, "Do you have an officer in charge of your medical library?", only 46 (23%) replied "Yes": of these only 15 (7.5%) reported having a full-time person in charge.

The size of collections is presented in Table 3 below.

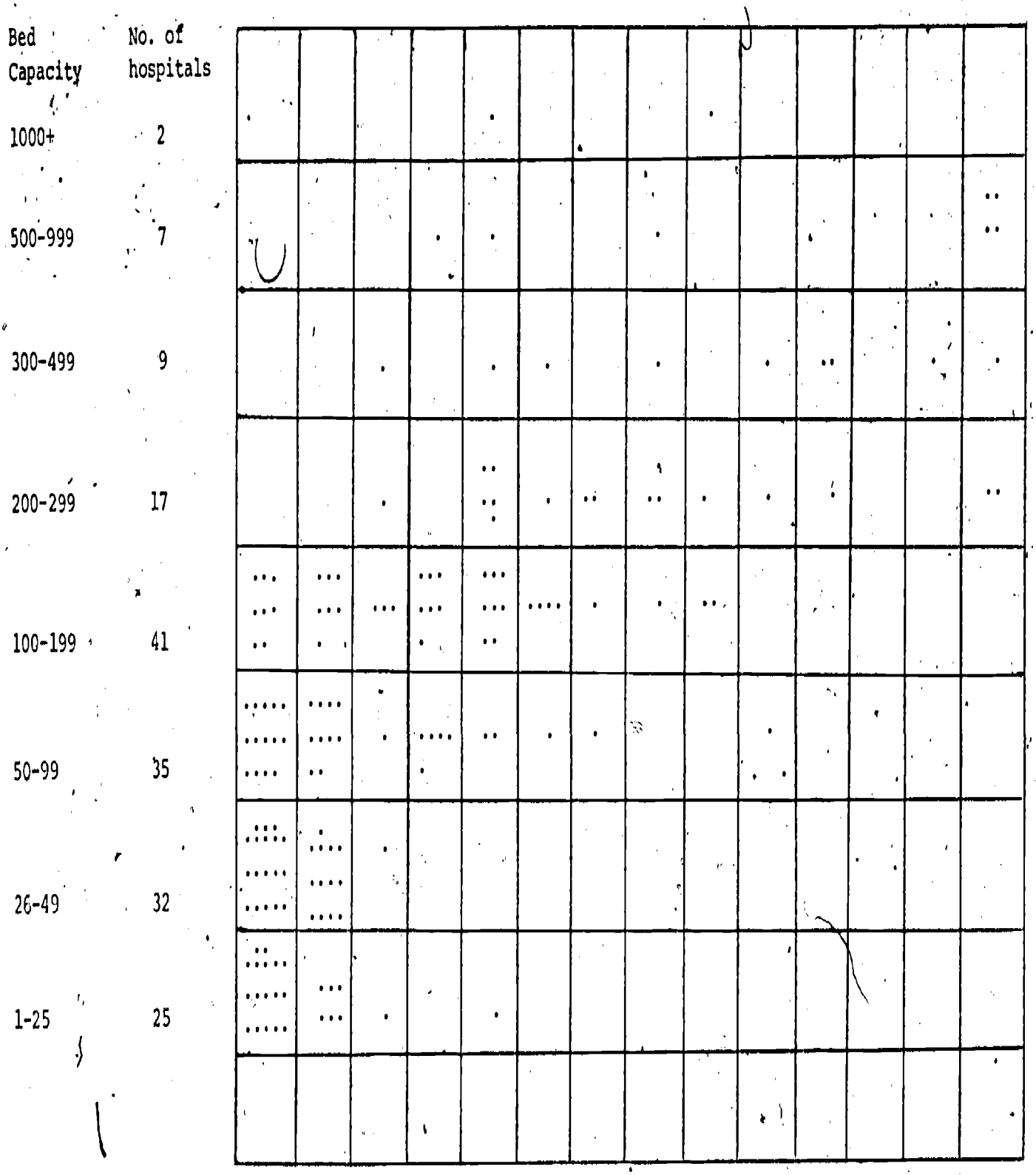
No. of Monographs	No. of Respondents	No. of Journal Titles	No. of Respondents
0	70	0	97
1- 25	44	1- 25	71
26- 49	8	26- 49	6
50- 99	16	50- 99	13
100-199	20	100-199	6
200-299	9	200-299	0
300-499	10	300-499	5
500-999	13	500-999	1
1,000+	10	1,000+	1
TOTAL	200		200

TABLE 3 Number of respondents according to collection size

The mode for both monographs and journals is zero items and the median 1-25 items. The smallness of the collections is self-evident.

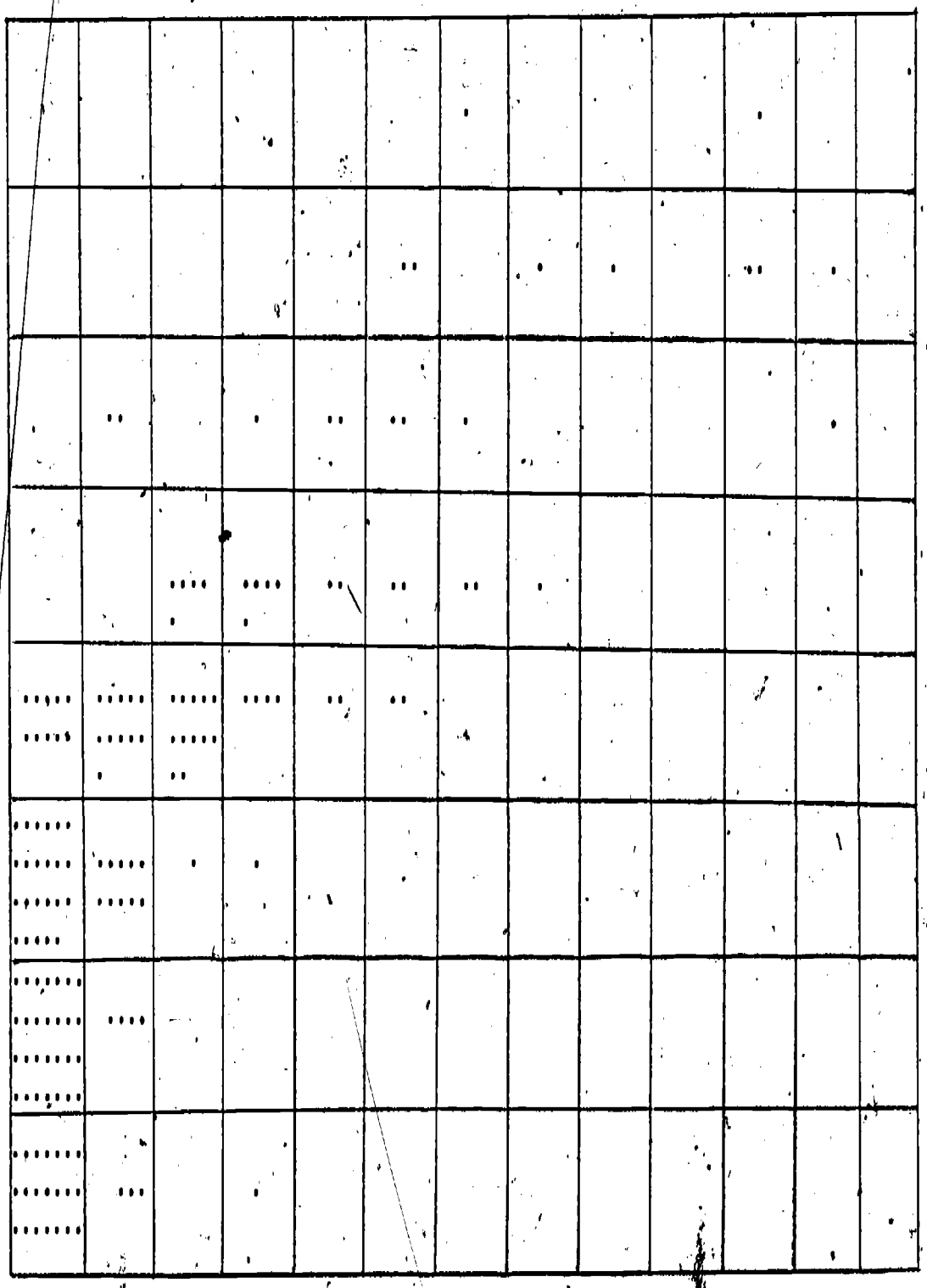
Collection size in isolation is not very meaningful and so the investigators attempted to correlate this with bed capacity. This was not a question on the questionnaire and statistics on bed capacity were obtained from the 1973 Australian and New Zealand Hospitals and Health Services Yearbook. (4) Some respondents were anonymous thus it was not possible to correlate this data for all the hospitals that indicated collection size. For some respondents, namely the Regional Offices of the Commission and the one medical school library, bed capacity is clearly not applicable. Correlations were finally obtained for 168 hospitals and the results are presented in the scattergrams shown on pages 10 and 11.

* Of which there is one for each of the health service regions into which New South Wales is divided.



Bed capacity of hospitals in relation to holdings of monographs : Scattergram 1

Bed Capacity	No. of hospitals
1000+	2
500-999	7
300-499	9
200-299	17
100-199	41
50-99	35
26-49	32
1-25	25
TOTAL	168



0	5	10	25	50	75	100	150	200	300	400	500+	No. of Journal
82	30	18	12	6	8	4	2	1	0	3	2	0	No. of hospital

Bed capacity of hospitals in relation to holdings of journal titles : Scattergram 2

Table 3 gives an indication of the limited size of most collections and the scattergrams reveal that this shortage of published resources is not restricted to small hospitals. For example, of the 41 hospitals with between 100-199 beds, 10 do not take any current journal titles; 11 receive between 1-5 titles and 12 between 6-10 titles. What also becomes apparent is that even though there is a broad positive correlation between bed capacity and collection size, there is also a considerable degree of scatter. For example, 4 hospitals with between 100-199 beds receive over 25 current journal titles, whereas 10 hospitals with between 200-299 beds receive under 25 journals. One hospital with over 1000 beds receives 80 current journal titles and one hospital with between 200-299 beds receives over 100 journals. One 50-99 bed hospital has over 600 monographs and yet of the two hospitals with over 1000 beds one holds 180 and the other 550 monographs.

65% of the respondents reported some monograph holdings, yet only 7.5% had a full-time person in charge of the collection and only 29.5% had a collection housed in a separate room. Thus, regardless of the quality and quantity of the collections, service and accessibility appear to be such that in the majority of cases it might be more appropriate to refer to the presence of a collection of materials in the hospital, than of a hospital library service.

That the paucity of library facilities is not due to the lack of need for information becomes apparent from an analysis of other items on the questionnaire. 145 respondents indicated that they would like "better access to reference books, journals and medical information generally"; 132 did not feel that they had "ready access" to such information sources.

It also becomes apparent, however, that a library service is not always seen as providing access to information. In reply to the question "If you do not have a librarian do you feel that you need one" 135 replied "No" and only 34 replied "Yes". Of the 145 respondents who indicated a desire for better access to information 87 indicated that they did not feel that they needed a librarian and 42 that they did not need a library.

Apparently little access to information is gained by hospitals from non-library sources. Asked "Do you have ready access to any other source of medical books, journals and information", 93 indicated that they believed they did not have ready access. Only 11 indicated that they believed they had ready access to information and did not feel the need for better access. 61 gave an unqualified "Yes" to the question and 56 of them named the source or sources of their information. Analysis of these sources reveals that in some cases there is a disconcertingly low estimation of what constitutes "ready access" to sources of medical information.

For example, in one region three hospitals named their sources of information: two of these named as their source a base hospital library of 200 monographs 10 current journal titles and no library staff; the third named the Medical Journal of Australia. In another region two sources were named: one, by a base hospital, was the British Medical Journal, the other was an individual medical practitioner. In another region out of four named sources two referred to a hospital library consisting of 12 current journal titles with an

Honorary Medical Officer acting as part-time librarian; the third respondent named one of the two hospitals above, and the reply from the fourth is quoted below:

> "Doctors library. We are only a small hospital and our local doctor has his own library and medical books. We have a medical book which gives staff the instruments required for an operation, this enables them to set theatre up for any operations which have not been carried out before."

The further removed from large medical library facilities and the smaller its own collection the less likely is the organization to tap the resources of larger collections. This is demonstrated by looking at the number and type of sources named by organizations in the Metropolitan Region and by organizations in the rural regions. The paucity of collections in rural regions is well demonstrated by the fact that in three such regions the largest journal collection is 10 titles. All the examples in the preceding paragraph are from rural regions.

Of the 63 organizations in the Metropolitan Region which responded to the survey, 35 named other sources of information and it is interesting to see where the other sources are located. The Medical Library of the University of Sydney is named by 13 organizations; the Australian Medical Association Library by 9; the Biomedical Library of the University of New South Wales by 7. Other sources include other metropolitan hospital libraries and the inter-library loan network.

Not only did more metropolitan organizations name sources, but also each organization named more sources: 6 organizations referred to the inter-library loan network in general; 9 named one source; 11 named two sources; 8 named three sources; amd 2 named more than three sources. In six non-metropolitan regions no organization named more than one source of information; in three regions only one organization in each named more than one source; in only one region did three organizations name more than one source. This pattern of intensive use of other sources by metropolitan organizations and significantly less use by rural organizations has implications for effective improvements in the inter-library loan network.

Another interesting insight gained from the survey data was that MEDLARS was only named three times as a source of information: by one hospital in the Metropolitan Region and by two hospitals in rural regions.

To summarize, the survey data suggests that outside of the Sydney Metropolitan Area a hospital library will be a small collection, with no full-time staff, providing little access to the resources of larger medical libraries. At the same time most hospitals have expressed a wish for better access to sources of information. It may be ventured then that, while the survey indicates that medical information services in New South Wales hospitals are seriously underdeveloped, it also indicates at least an awareness among most of them (and in the Health Commission) that their information needs are not being met.

(iii) Medical Information Facilities: Queensland

The results of the investigators' attempts to acquire a broad picture of medical information facilities in Queensland are set out below. The general range and scope of information sources are similar to those in New South Wales (see pages 7-8 above). Data collected in Queensland suggest that a survey similar to that of the New South Wales Health Commission discussed above would yield a highly comparable picture of hospital libraries as regards inadequacy of collections and lack of staff.

The Queensland State Health Department Library holds approximately 6000 monographs and 200 journal titles centrally, with some scattered collections, such as those on child welfare and Aboriginal health, housed elsewhere. There is unfortunately no union catalogue. Staff consist of two qualified librarians and two clerical assistants. There is no statistical data on hospital library holdings or on inter-library loan transactions. The library will provide the inter-library loan service if it is requested by a hospital library. The Australian Medical Association Library (Brisbane) offers a photocopying service to rural medical practitioners: this consists of supplying a photocopy of a cited item when it is requested. There is no mechanism to advertize this service to the estimated 700 or so practitioners who as members of the A.M.A. are entitled to use the service. The Library holds approximately 9,500-10,000 monographs and subscribes to 125 current journal titles. There is one full-time unqualified person to provide service. Again there is no statistical data on the number of photocopies sent and of inter-library loan transactions, or on the type of items that are requested and so on.

Statistical data, such as the number of reference queries handled, can often be meaningless or even misleading without careful interpretation. However, a quantitative picture of its main operations is essential to the effective management of any library. Unaware of the proportion of actual to potential users, unable to define the scope of the services it now provides and to derive any index of user satisfaction let alone user needs, a library cannot provide an information service responsive to its clients. These remarks are not meant as criticism of the present staff of any of the medical libraries visited. A glance at the Connecticut standards (see page 6 above) indicates that in the Australian medical library environment staff in proportion to holdings is grossly inadequate. For a library of 600 monographs and 150 journal titles the Connecticut standards recommend two librarians and one clerk. In one instance here we have a collection of 9,500-10,000 monographs and 125 journal titles serviced by one unqualified person. Consequently, it is not surprising that that person simply does not have the time to collect data on present use, plan collection building and weeding, advertise library service to potential users and so on.

Inadequate staffing was found also in the teaching hospitals affiliated with the University of Queensland. For example, one hospital with approximately 9,000 monographs has one librarian, one library assistant and the services of part-time casuals; another with approximately 4,000 monographs has a staff of one unqualified person. One of the affiliated teaching hospitals has no library at all.

Apart from the apparent lack of staffing there is also the problem of the adequacy of collections. Figures giving the size of library holdings are not very meaningful without associated data on the use of the collection. Similarly, figures for inter-library loan transactions, though useful for providing a broad picture of the supply and demand pattern between libraries, do not give much guidance unless one knows which titles are being requested. As far as can be ascertained such necessary information is not being regularly compiled.

The University of Queensland Library has however compiled statistics on all its inter-library loans and borrowings between 15 March 1971 and 15 June 1971, and these were kindly made available to the investigators by Mr. S. Routh, Acting Deputy Librarian. These figures show that the subject area in which loans were most often requested by other Brisbane libraries was the medical sciences. They accounted for a total of 409 loans. The next largest category was engineering with 190 loans, followed by anthropology and biological sciences with 180 loans, then agriculture and veterinary science with 101 loans. All other subject groups accounted for fewer than 100 loans each. Of the 1572 loans made by the University to other Brisbane libraries in that period of three months in 1971, 353 were to health-related organizations. It seems that an examination of the adequacy of present collections in the health sciences in Queensland is already overdue.

A look at total inter-library loan figures for that period can give a broad picture of supply and demand patterns. Table 4 has been compiled from the figures supplied.

Borrowed by the University of Queensland Library		Lent by the University of Queensland Library	
From other Brisbane libraries	307	To other Brisbane libraries	1572
From other Queensland libraries	20	To other Queensland libraries	734
From other Australian libraries	1087	To other Australian libraries	587
Other	112	Other	92
TOTAL	1526	TOTAL	2985

TABLE 4 Inter-library loans to and from the University of Queensland Library, 15 March - 15 June 1971

The total figures show that the University of Queensland Library lent far more than it borrowed, but the breakdown shows that was only true within Queensland. The disparity between the University's borrowing and lending is most noticeable in the figures for libraries outside of the Brisbane area. Here one university and two colleges

of advanced education accounted for the bulk of those loans. Within the Brisbane area the University also lent far more than it borrowed. In fact it appeared to be acting as a regional resource library although, of course, it was not being funded for doing so.

Outside of the Queensland area the situation was reversed and the University Library was a heavier borrower than a lender: other university libraries and the National Library of Australia were the major sources.

As previously mentioned unless the titles and the time-span involved are known information cannot be extrapolated from inter-library loan statistics concerning the adequacy of collections. However, informal conversation with librarians in the Brisbane area revealed that in some cases current journals were sent on a lengthy circulation route to members of the organization. The absence of the material from the library was not felt to be an inconvenience since an inter-library loan request would be promptly met by the University Library. It is open to debate whether this is a valid use of the inter-library loan network. It also became apparent in conversation that the choice of source to which an inter-library loan is directed is a very random, personal decision. This topic has already been systematically observed (39) and will not be elaborated upon here.

New South Wales and Queensland

None of the health sciences libraries which have been discussed actively offer their services. They rather adopt a passive role of fulfilling service requests if they are received. The extent to which potential users will request library and information services is largely determined by the extent to which they are aware of the amount of existing information and of how it can be accessed. For example, the practitioner who is unaware that an adverse reaction has been reported for a particular drug, and who is unaware of the various indexes and abstracts that contain references to such reports, is unlikely to consult the literature as a check on his prescribing behaviour.

No doubt there are many individuals who are frustrated in their attempts to acquire published literature and a more active library service would assist them greatly. There is however, also the problem of creating an awareness amongst potential users that they need to consult the literature, and that there exist many services to help them gain access to those parts of it relevant to them. As far as the investigators could ascertain in neither New South Wales nor Queensland is there any systematic attempt to do this.

All the university medical libraries provide some education for their readers in the use of medical libraries and the bibliographical aids available. At present such instruction is sporadic and not integrated as a requisite part of the academic course. The librarians are thus inevitably at a disadvantage in the battle to obtain student interest and concentration.

Another significant problem is that such courses are naturally carried out within a study environment. Learning obtained there will not automatically flow on to the working environment, especially not if the working environment is a hospital with no bibliographical aids and a rudimentary journal collection. The user must be made

aware of his continuing information needs in his working environment and the access to the sources to satisfy those needs must be available in the working environment.

(iv) Medical Information Facilities: Victoria

Against the background of the present situation in New South Wales and Queensland it is interesting to look at some recent developments in Victoria which have occurred largely as a result of the voluntary initiative and co-operation exercised by members of the Medical Librarians' Group (Victorian Branch).

The Victorian hospital system is, like the New South Wales system, based on regional divisions. In Victoria however these number only six sectors. The Victorian Library Network suggested by Jacqueline Baillie (5) would be based on these regional divisions. Small hospital libraries in each sector would be affiliated to one of six large urban hospital libraries. It is from the library of the appropriate urban hospital that "the smaller country hospital library could receive easily ontainable inter-library loans as well as other assistance and advice". (5:1)

In turn the large urban hospital library would turn for assistance to the libraries of the university medical schools. Geographical location and teaching affiliation would be at least two factors to consider in determining from which library the urban hospital library would seek assistance.

The size and function of small hospital libraries are perhaps made more meaningful when placed in perspective against the size of the hospital it might service. In 1972 of 111 non-metropolitan hospitals in Victoria 90 had fewer than 100 beds, 13 between 100-199 beds, 7 between 200-299 beds, only 1 over 300 beds and none over 400 beds. (4) The small hospital library is envisaged, according to the proposed Victorian Library Network, as having a small collection of core books and journals, as well as such material necessary to support any fields in which the hospital may specialize. The rationale behind and the criteria for establishing core collections are interesting and will be discussed in following sections. The Medical Librarians' Group (Victorian Branch) has already compiled such lists (45;46) and they appear to be realistic in terms of the number of titles and costs involved. For example, books recommended for first purchase number only 41 titles and are estimated to cost approximately $375-$400; the total basic book list contains 134 titles and the list of basic journals contains 86 titles.

Jacqueline Baillie makes the point that participation in a regional network is important precisely because the "average country hospital library will probably always be a small one" (5:1) and thus it is essential to have access to larger collections. This access can only be obtained if there are trained staff aware of how the network functions and what its purpose is. She suggests that, where staff trained at least up to the Library Technician level are not available, approaches might be made to the public library system to share the services of trained staff, or that inservice training be arranged for untrained incumbents. The Medical Librarians' Group (Victorian Branch) have already provided some inservice training courses and will provide a panel to give advice and assistance in the setting-up and running of hospital libraries.

Operating within each sector of the Network there would eventually be "a fully professional Librarian/Information Officer to supervise and co-ordinate information services in the Sector". (5:3) The duties of this position would include assisting in rationalized collection building, arranging central ordering and processing, acting as a centre for inter-library loans and encouraging the development of services, especially reference service.

In several points of detail the investigators differ from Victorian views on how the medical information network should be developed and those points will be covered at length later in the report. These differences of opinion in no way affect the validity of compilation of core lists, provision of training institutes and provision of advice to small libraries as ventures suitable to be considered for implementation as pilot studies subject to continual evaluation to assess impact and attainment of objective.

Another Victorian development that perhaps merits closer analysis and evaluation is the proposed Regional Drug Information Network. A Drug Information Service was established at the Royal Melbourne Hospital in 1969.(40) The purpose of the service is "to supply selected information related to drugs and therapy when and where it is needed in the Hospital to improve patient care". (40:61) Since its implementation demand for the service has grown at a rate to suggest the need for similar services in other hospitals. It has been proposed that the various Services should form a Regional Drug Information Network co-ordinated by a Central Drug Information Bureau.

At present the Royal Melbourne Hospital Drug Information Service is co-operating with the Woden Valley Hospital Drug Information Service (A.C.T.) in the shared indexing of selected journals for drug-related information. Whilst the investigators are completely in favour of co-operative ventures they regret that such developments are occurring with little liaison with hospital and medical libraries; especially with regard to regional network plans. Even amongst the various drug information services there appears to be a need for closer collaboration. For example, there are a multitude of varying drug profiles at present. The experience librarians have accumulated in attempts to establish standard cataloguing practices could well prove of value to those involved in attempts to establish a standard drug profile.

In the area of user-awareness a scheme of interest is the course in medical bibliography conducted by the Biomedical Library, Monash University. This course is integrated in the medical curriculum. One section, for example, consists of a compulsory 5,000 word review of the literature by second year students. The subjects are set by the Medical Faculty and satisfactory performance is an academic requisite. Talks are regularly given by library staff and detailed guides to scientific literature and the related bibliographical aids have been compiled.

Especially interesting is the active attempt by the Monash Biomedical Library to retain a literature awareness in the students once they leave a study environment and enter a working one. Upon

graduation each student receives a personal letter accompanied by a leaflet offering a current awareness service, literature searches, MEDLARS service and a reference telephone service as well as loans of monographs and photo-copies of journal articles. The Library also offers to "give quick refresher courses on the latest developments in bibliographic aids in medicine, or to speak to local groups on the same subject if a suitable venue can be arranged". (54)

Summary: New South Wales, Queensland and Victoria

Data collected in New South Wales, Queensland and Victoria indicate that -

hospital libraries have (i) inadequate collections;

(ii) insufficient trained staff;

(iii) haphazard lines of communication with each other as evidenced by their utilization of the inter-library loan network:

and, that medical information facilities in general consist of -

(iv) a multiplicity of sources with few formal lines of communication existing among them;

(v) a paucity of mechanisms to ensure awareness amongst users and potential users of their information needs and of the services available to satisfy those needs.

III OPTIONAL SOLUTIONS

The investigators again emphasize that to date there are insufficient data on the present situation for a realistically planned national network to be developed. Analysis of some of the data available suggests however, certain strategies that might prove to be feasible. Implementation of these strategies in a series of pilot studies is suggested: such studies should be adequately funded and conducted full-time by staff with no other commitments.

Each pilot study is envisaged as incorporating a thorough analysis of the present situation. Once a strategy is implemented it must be accompanied by continuous evaluation to assess cost, impact and attainment of objective. Where a number of strategies might prove feasible a number of pilot studies might well be undertaken to obtain comparative evaluations.

Regardless of which bodies fund any particular project, the National Library of Australia is envisaged as having an important co-ordinating role. This includes at least two vital functions: first, to ensure that individuals engaged in similar studies are kept aware of developments; second, to ensure that progress and evaluation are well-documented and widely disseminated.

It is in the above perspective that the following strategies are discussed.

(i) Hospital Library Development

The survey of hospital libraries conducted by the Health Commission of New South Wales indicated that of the 168 hospitals for which bed capacity could be ascertained, 25 were between 1-25 beds; 32 between 26-49 beds; 35 between 50-99 beds; 41 between 100-199 beds; 17 between 200-299 beds; 9 between 300-599 beds; 7 between 600-999 beds and only 2 over 1000 beds.

Questions immediately arise. Is a library necessary in a hospital of say 50 beds, or 150 beds or 250 beds? Is hospital bed capacity a valid criterion for deciding upon the need for a library? What sort of use is made of a library in, say, a 100-199 bed hospital? Is it justifiable to suggest, as the investigators have suggested on page 7, that a collection of six current journal titles is inadequate for a hospital with 216 beds, geographically remote from larger collections and not participating in the inter-library loan network?

Such questions can only be answered by a thorough analysis of the present situation. The investigators believe such an analysis should be based on:

i. bibliographical data on monograph and journal holdings in hospital libraries;

ii. bibliographical analysis of use made of current collections;

iii. bibliographical analysis of inter-library loan transactions;

iv. analysis of other sources of information currently used by actual and potential hospital library clientele;

v. analysis of unsatisfied information needs of actual and potential hospital library clientele.

Pilot Study no.1. Information flow in hospitals: The investigators recommend that a representative sample be drawn from the following categories of Australian hospitals:

(i) Urban teaching hospitals with over 1000 beds;

(ii) Urban teaching hospitals with under 1000 beds;

(iii) Urban non-teaching hospitals with 600-999 beds;

(iv) Urban non-teaching hospitals with 400-599 beds;

(v) Urban non-teaching hospitals with fewer than 400 beds;

(vi) Rural hospitals with more than 200 beds;

(vii) Rural hospitals with 100-199 beds;

(viii) Rural hospitals with 50-99 beds;

(ix) Rural hospitals with fewer than 50 beds.

The purpose of the study is to define the information needs of health care personnel in the total hospital environment. Use made of existing hospital libraries represents only part of the scope of any such study.

The steps to be taken and their approximate sequence are outlined below.

PHASE I

(1) Analyze the present information flow to and within the hospital environment. The goals are:

i. identify groups of individuals in terms of their shared use of information, for example, drug-related information, hospital administration data;

ii. among information groups to identify:

a) the generators of information within the organization, for example, generators of patient charts;

b) the transmitters of information within the organization, for example, informal verbal communicators;

c) the importers of information to the organization, for example, generators of drug advisory bulletins.

The three groups are unlikely to be mutually exclusive.

iii. identify the communication media utilized by the generators, transmitters and importers of information;

iv. identify the information sources utilized by the generators, transmitters and importers of information;

v. identify areas of unsatisfied information needs should such exist.

OBJECTIVE To define the information profile of the generators, transmitters and importers of information within each identified information group. An information profile includes the density and frequency of information in-put as well as media and source preference.

(2) Analyze the information sources contained in and accessed through the hospital library (where one exists). The goals are:

i. bibliographically evaluate the current collection, for example, currency of monographs, journal selection criteria;

ii. analyze use made of the current collection by:

a) bibliographical analysis, for example, which titles are used;

b) user analysis, for example, which categories of individuals use the library;

iii. analyze use made of the inter-library loan network in terms of;

a) requests sent: bibliographical analysis, user analysis;

b) requests received: bibliographical analysis, user analysis;

iv. analyze the performance of the library as an access-point to information sources, for example, literature searches;

v. analyze areas of negative library response should such exist.

OBJECTIVE To define the present function of the library in terms of its current usage.

PHASE II

(1) Compare the present library and other information sources used with the information profile of each information group. The goals are to:

i. assess subject-coverage matching;

ii. assess media and format matching;

iii. assess acceptable time-constraint parameters.

OBJECTIVE To assess the adequacy of the existing hospital library in meeting the information needs of the health care professionals: to assess the adequacy of the information sources used in those environments without a library service.

PHASE III

Decisions on goals and procedures for PHASE III have to await the results of PHASES I and II.

OBJECTIVE To utilize the data obtained in PHASES I and II in order to design the hospital library collection and services to meet the continuing information needs of the health care professionals.

Should the data in PHASE II show that those needs are being met by the hospital library or other information sources, there would, of course, be no need to proceed to PHASE III. Similarly, should it become apparent perhaps as early as PHASE I, that information needs, both satisfied and unsatisfied, are not capable of being satisfied by a hospital library, again, PHASE III would obviously not be implemented.

So far as the investigators are aware no attempts to study information flow in hospitals have been made on a scale such as is envisaged for the above pilot study. While prepared to argue that the impact of application of the results of such a study on medical information problems in Australia would be high, the investigators realize that the consumption of resources of staff and time in the study would be correspondingly high. It is therefore reasonable to examine less costly alternatives. In particular, because core lists are widely used and often a basis on which hospital library services are built, their effectiveness in upgrading hospital information services must be examined.

Core lists

In general the investigators would argue that the collection of data as suggested in PHASE I of the above pilot study would be essential for an informed decision on whether or not the deposit of a core collection could have high impact on a hospital's information services. It is highly probable that an appropriate core collection which was well serviced would be "used a lot by its users", which is what the purveyors of a medical information service told the investigators when they suggested that its use was not widespread. Repeated use of a core library collection by a small fraction of potential clients need not imply that it is the best means of satisfying the information needs even of its present users.

A brief discussion of some of the limitations in the criteria used for compiling core lists of monographs and journals might illustrate the above point. Some common criteria include citation analysis, statistics of library use and the opinion of specialists in the field. Each method has its own limitations and each will be discussed in turn, although always with the proviso that granted cognizance of their limitations, core lists can still be one among several possibly fruitful strategies.

One of the earliest attempts at citation analysis of medical literature was reported by K.K. Sherwood in 1932 (*68*). His purpose was to "point out some standards by which an intelligent choice [of journals] may be guided". (*68:273*) His method and findings have been

confirmed by later studies and will be briefly outlined as an example of citation analysis and its uses.

Sherwood selected the Journal of the American Medical Association as the data base for his study on the basis that "its articles are almost exclusively by men of national reputation".(*68:273*) He analyzed one year's issues (July 1930 - July 1931) listing all the references found in the footnotes. His argument was that these would "represent the magazines which the best class of clinicians at the present time considers sufficiently valuable to read". (*68:273*)

The one year studied yielded 588 articles which together yielded 4186 references or citations to journal articles; 422 references to monographs; 201 references to special reports etc., and 103 references to personal communications. He found that 55% of the 4186 article citations were to articles that had appeared within the last 5 years, that is, 1926-1930; 83% were to articles published within the last 15 years; only 5% were to articles published 30 or more years ago. The 4186 article citations came from 556 journal titles. Sherwood ranked these according to the number of citations each had received and found that the first 10 titles accounted for 38% of all citations and that the first 50 accounted for 70% of all citations.

The problem arose of whether the size of journal circulation could be biassing citation patterns, that is, if a journal is read widely it might be cited more frequently for that reason only and not because of the intellectual value of its contents. Therefore the number of citations per 1000 circulations was calculated and then compared to total magazine circulation and rank as determined by total number of citations received. His conclusion was that "it is unlikely that there exists any significant relation between circulation and the degree to which a magazine is quoted". (*68:275*) For example, the Kentucky Medical Journal with a circulation of 1875 received 1.57 citations per 1000 circulated and ranked 120 out of 556 journal titles; Archives of Neurology and Psychiatry with a circulation of 1418 received 26.1 citations per 1000 circulated and ranked 14. The 15 most frequently cited journal titles from Sherwood's study are listed in Table 5, along with data related to the occurrence of these titles on more recent lists which may be of general interest.

✓ = On the list

x = Not on list

JOURNAL TITLE	Sherwood's rank (68)	Garfield's rank if in top 150 journal titles (29)	Bell's list (8)	Brandon's list (13)	Moll's list (53)	Stearns' list (74)	Medical Librarians' Group (Victorian Branch) list of journals (46)
Journal of the American Medical Association	1	26	✓	✓	✓	✓	✓
American Journal of the Medical Sciences	2	-	✓	✓	x	x	x
Archives of Internal Medicine	3	89	✓	✓	✓	x	✓
Surgery, Gynecology, and Obstetrics	4	101	✓	✓	✓	✓	✓
Klinische Wochenschrift	5	144	x	x	x	x	x
Archives of Surgery	6	136	✓	✓	x	x	x
American Journal of Obstetrics and Gynecology	7	77	✓	✓	✓	✓	✓
American Journal of Physiology	8	14	✓	✓	x	x	x
Lancet	9	11	✓	✓	✓	✓	✓
Journal of Biological Chemistry	10	3	✓	✓	x	x	x
New England Journal of Medicine	11	25	✓	✓	✓	✓	✓
American Journal of Diseases of Children	12	137	✓	✓	✓	x	x
British Medical Journal	13	27	✓	✓	x	x	✓
Archives of Neurology and Psychiatry (now Archives of Neurology)	14	-	✓	✓	✓	✓	x
Archives of Dermatology and Syphilology (now Archives of Dermatology)	15	-	✓	✓	✓	✓	✓

TABLE 5 Sherwood's top 15 titles and their occurrence in other lists

Some early evaluations (*8*) of the validity of citation analysis found that lists so derived showed little correlation with either lists selected by specialists in the field, or with use as determined by library circulation figures. Since then, however, citation analysis has been developed into a more sophisticated technique, for example, the work of Eugene Garfield (*29*) utilizing the Science Citation Index data base, controlling for the number of pages per journal issue and so on. However, even granted that citation analysis is a valid technique for determining which journal titles carry articles cited frequently by leaders in the field, it does not follow that these titles will satisfy the information needs of the clientele of the hospital library.

A previous study by the investigators (*43*) suggested that not only did practitioners primarily engaged in direct patient care consult less literature, but they also tended to consult different titles from those primarily engaged in research and teaching. Those primarily engaged in research and teaching were far more literature orientated and published far more frequently. A selection of journal titles based on the researchers' citation patterns may not be an appropriate collection for a practitioner. For example, a title such as Australian Family Physician would not rank highly in a citation analysis study, but data suggest that it is considered useful by the practitioner. (*43*)

Another limitation of citation analysis as a selection guide is that it is, by definition, literature orientated. A high ranking journal in surgery may not convey information on a new surgical technique as effectively as a film on the topic.

These rather obvious points are belaboured because it is often as easy to overlook the obvious as the difficult. If there is no library at all, or just a few poorly selected journals, and a core collection of say 30 or so high ranking journals is established that collection will probably be heavily used. Evaluation of the use of the core collection may well indicate that it is stimulating library use and satisfying hitherto unsatisfied information needs. However, it may not be doing so as effectively as a collection selected on different criteria or in a different medium or media or as a different type of service could have done. Hence, again, the investigators stress the importance of the collection and analysis of data as suggested in PHASE I of the pilot study above.

Core lists compiled on the basis of library usage (for example, *72*) have the same limitations. They also have the added limitation that they could represent poor quality journal titles if the present collection is inadequate. Core lists compiled on the recommendation of specialists in the field (for example,*74*) carry all the above limitations.

The investigators recommend that after analysis of PHASE I and II data that all possible sources of information be considered. Probably some information needs will be satisfied by a small collection of journal and monograph titles. Perhaps this segment of the total information profile of the hospital environment is common to all or many hospital environments. Thus, some journal and monograph titles, a core collection, may be appropriate for many hospital libraries. However, the investigators urge that other information sources should not be overlooked and that all criteria used for selecting a core collection be carefully analyzed.

In terms of cost and feasibility core collections for Australian hospital libraries appear promising. As mentioned (see p.17) the books recommended for first purchase on the Victorian list are estimated to cost approximately $375-$400. The total list contains only 134 titles and the list of journals contains only 86 titles. The book list covers reference works and the list of journals includes indexes. The National Library of Medicine considers a $US3,000 one-year, non-renewable grant a realistic sum to aid in the establishment of a core collection. (77:26)

There are a variety of existing lists which could be used for guidance in devising Australian core collections. For example, the Brandon list (13) in its fifth revision (1973), based on library and specialist opinion, lists 410 monograph and 136 journal titles for the "small hospital library" (undefined) at an estimated cost of $US12,000. Items recommended for first purchase are estimated to cost $US3,250. It includes reference materials, both monographs and journals, and is intended as a selection tool.

The Moll list (53), based on specialist review of the journals on Brandon's list, is designed for the small hospital which is defined as "over 100 beds but not more than 300-350 beds". (53:268) Moll found considerable divergence of opinion concerning the number and titles of journals among the 23 specialists who reviewed the Brandon list: 5 felt that 20 titles sufficed whereas 3 felt that over 70 titles were necessary. He concluded:

> "These divergences of views indicate basic disagreements as to the size of a journal collection in the small hospital library. ... On the other hand, there existed general support for a definite number of journal titles." (53:268)

His final list has 41 journal titles, perhaps with an American bias, for example, the British Medical Journal is not listed. The only index is Index Medicus. Current Contents was not on the Brandon list and it was not among the additional titles suggested. It is interesting to note the omission of Current Contents from a list selected by physicians practicing mainly in small hospitals.

The Bell list (8) was compiled by identifying those journal titles held by at least 90-100% of 40 randomly selected medical libraries in the United States. The average collection size of the libraries in the sample was 102,007 volumes, unfortunately the average for current journal titles is not given: the final core list contains 369 titles, among which is the Medical Journal of Australia. Yearbooks are included but not abstracting or indexing journals.

The Stearns list (74), compiled on the basis of specialist opinion, is entitled Recommended Books and Journals for an Integrated Health-Science Core Library. It aims to include all library materials necessary to service the "community hospital" (undefined). The 1970 list contains 87 monograph and 70 journal titles, estimated to cost $US4,000, and to require 40 linear feet for books, 90 feet for journals and 15 feet for reference tools.

None of the above lists includes non-print material, - an omission the investigators consider regrettable. Tapes and cassettes for instance do not require prohibitively expensive equipment and

could well be incorporated in a hospital library collection.

The criteria for compiling lists vary and size variations are also apparent. For example, the Brandon ratio of 410 monographs to 136 journals, Stearns' ratio of 87 monographs to 70 journals, and the Victorian Medical Librarians' Group's ratio of 134 monographs to 86 journals. There are also interesting variations in titles listed. For example, Brandon recommends only Abridged Index Medicus, the Medical Librarians' Group (Victorian Branch) recommend either Abridged Index Medicus or the full Index Medicus. The Victorian lists naturally contain several Australian and British titles not found in any of the other lists mentioned. It is interesting to note that some of the United States titles are found only in the Victorian journal list and to speculate on the reasons for their non-inclusion among, say, Brandon's 136 titles, or Bell's 369 titles. For example, only the Victorian list contains the following:

Clinics in Endocrinology and Metabolism

Clinics in Gastroenterology

Clinics in Hematology

Current Problems in Surgery

Orthopedic Clinics of North America

Seminars in Arthritis and Rheumatism

From this brief presentation of some of the differences in a few current lists it becomes apparent that core lists for Australian hospital libraries of different sizes and in different environments could usefully be compiled. Such a project is therefore suggested as Pilot Study 2.

Pilot Study no.2. Core collections for Australian hospital libraries.

PHASE I

Establish criteria for definition of Australian hospitals as "small", "medium", "large" and so on.

As working criteria, "small" might be equated with fewer than 100 beds;

"medium" with 100-299 beds;

"large" with more than 300 beds.

As investigational criteria, the number of medical, paramedical and administrative staff, specialty units, paramedical and out-patient services would have to be considered.

As comparative criteria, the statistical categories used by federal and state departments of health, health and hospital commissions, and so on, would have to be taken into account.

PHASE II

Establish criteria for the size of collections required in hospitals of different sizes, that is, for the number of monographs, journal titles and items of non-print materials.

As working criteria, "small" hospitals might be expected to house 50-100 monographs and 10-20 journal titles (that is, a ratio of monographs to journals of approximately 5:1);

"medium" hospitals might be expected to house 100-300 monographs and 20-60 journal titles (that is, a ratio of monographs to journal titles of approximately 5:1);

"large" hospitals might be expected to house more than 300 monographs and more than 60 journal titles.

As investigational criteria, the number and type of staff, of specialty units, and of services offered would have to be considered.

As comparative criteria, the holdings of well-developed libraries in large hospital libraries would need to be considered, along with ratio of monograph to journal and to non-print materials.

PHASE III

Establish selection criteria for different categories of hospitals.

As working criteria, the size type and degree of specialization of the hospital, the quality of surrounding medical library facilities, and ease of access to other sources of information would have to be considered.

As investigational criteria, data on library use (viz. holdings, circulation, interlibrary loan) from comparable hospitals and from medical libraries which lend frequently to hospitals as well as surveys of some aspects of information need (cf PHASE I of Pilot Study no.1) would have to be used.

As comparative criteria, existing core lists and specialist review of them together with citation analysis may need to be used.

Core collections compiled within this framework should then be evaluated to assess impact. In evaluating the impact of the core collection it would be important to design a method devoid of emotive preconceptions on the value of a library. The objective of the core library is to serve the continuing information needs of the local health science community and its impact-factor is the extent to which that community utilizes it to satisfy those needs.

Pilot Study no.2 and the evaluation of the core collections devised in it are considered to require professional staff with clerical assistance. Once this essential and preliminary work is accomplished it is envisaged however that core collections at least in the "small" and "medium" hospitals could be serviced by a library assistant trained by and with ready access to the advice of a professional librarian. The type of training and advice considered appropriate is discussed in the following section.

(ii) Training and Education

Shortage of trained staff is a problem seriously affecting medical library service. The survey conducted by the Health Commission of New South Wales, for example, showed that of the 200 organizations in the survey data only 15 had a full-time person in charge of the library and that only 20 out of the total 48 part-time or full-time staff had any library training at all.

Shortage of trained staff is not a problem confined to rural areas. For example, the Australian Medical Association Library (Sydney), with 40,000 volumes, has two professionally qualified librarians. The Biomedical Library of the University of New South Wales with responsibility for the information needs of the Medical and Biological Sciences Faculties, as well as its responsibilities to affiliated teaching hospitals, has only 3 positions on its establishment for qualified librarians.

In the face of the present staffing situation it is unrealistic to demand professionally trained librarians in all hospital libraries. It is equally unrealistic to expect an untrained person to provide professional service. However, skilled service is necessary in the medical information area because of:

i. the inadequacy of present collections;

ii. the multiplicity of unco-ordinated information services.

The first point has already been elaborated by Jacqueline Baillie (see p. 17). To recapitulate: a small collection, since it is small, must be serviced by someone skilled in gaining access to further sources of information.

The second point touches upon an aspect of medical information services which the investigators have previously discussed, (43), namely, that not only are there a number of information services, but also that there are some very sophisticated services. There are, for example, MEDLARS and the numerous abstracting, indexing and alerting services available. There are also audio-visual services, for example, the National Medical Audio-Visual Center of the National Library of Medicine, and there are in Australia tape, cassette and radio broadcast services. There is also in medicine a strong tradition of formal and semi-formal conferences, seminars, continuing education programmes and so on. In other words the problem is not lack of information services, but rather how to select the most appropriate source and access it quickly. This requires a knowledge of the details of the various sources and a knowledge of the appropriate lines of communication. This knowledge is at present hard to obtain because of the multiplicity of sources, and because of lack of co-ordination among sources.

It is seen as the responsibility of the medical librarian to guide potential users to the appropriate sources. This does not mean that every person in charge of a hospital library should be able to formulate a MEDLARS search strategy, or conduct a detailed literature search. However, every person in charge of a hospital library should be aware of the features of the various services, of how the user can

gain prompt access to them, and to the services of professionally trained staff when necessary.

The problems of access to other collections through the inter-library loan network and of lack of co-ordination among information services will be discussed in following sections. Here the investigators are concerned with the immediate problem of lack of trained staff: training institutes and workshops appear to be a feasible strategy.

The Medical Librarians' Group (Victorian Branch) have already attempted to provide some guidance to the untrained hospital librarian. They have, for example, set up a panel to give advice and guidance in the setting up and running of a hospital library. Their Notes on Plan of Instruction for Untrained Persons in Charge of Hospital Libraries (47) cover topics such as budgetting, book and journal selection and ordering, inter-library loan procedures, MEDLARS and the role of the Medical Librarians' Group.

Many of the United States Regional Medical Library Programs have training institutes, workshops and so on for hospital librarians. NERMLS (New England Regional Medical Library Service) has been running Training Institutes for hospital librarians since 1969. (33;34) It has found that a course of one week's duration is necessary to cover all the material. Topics include the role of hospital librarian, the place of the hospital library in overall medical care, as well as sessions on selection and acquisition, use of Index Medicus and other indexes, and medical terminology. (58)

Other RMLP activities include the Lister Hill Library of Health Sciences' workshop on "Organizing and managing the hospital library" (62:11, June,1974:4); the New Jersey Hospital Library Association's Fall Educational Program and Workshop "A hospital learning experience (48:v(8), November, 1974:2); and the Mid-Atlantic Regional Group of the Medical Library Association's "Encounter Groups" on topics such as "Hospital library management" and "Cataloguing". (65:4, Aug/Sept 1974:1)

It would be pointless to try to enumerate all the workshops, institutes, demonstrations and so on that have been held. What is significant is that there exists already a variety of approaches to training hospital library staff that can be looked at in order to help design a suitable Australian programme.

There are also a number of handbooks designed for the untrained hospital librarian (10;18;19;20;21;22) that can also offer guidelines as to the appropriate content of a training course. There are also audio-visual programmes (48:v(7),October, 1974:3), which unfortunately the investigators have not been able to examine, which could be interesting.

In terms of feasibility and cost it is felt that a course suitable for training non-professional hospital library staff could be developed and mounted immediately. There is, as indicated above, a variety of precedents that could be used for guidance, and their very number indicates that they are considered effective.

The longest, and most expensive in terms of staff numbers, that the investigators have identified are the NERMLS Institutes: 7 days and 14 instructors. The NERMLS staff included reference librarians, cataloguers, systems librarians, an education specialist, and so on. Such a range of specialist librarians is unlikely to be necessary immediately here. The aim of the proposed course for Australian hospital library staff is not to produce medical cataloguers or MEDLARS analysts: the aim is to produce staff capable of servicing a core library collection and guiding users to further sources of information and expertise.

Obviously the more that is known about the information needs of hospital personnel the more appropriately may such a course be designed. It is therefore recommended that a Pilot Study be implemented within the following framework:

Pilot Study no.3. Design of course for untrained hospital library staff

PHASE I

Define the role and function of the hospital library in hospitals of varying sizes.

METHOD (1) Analyze data from the recommended information flow study;

(2) Analyze data from the recommended core collection study.

PHASE II

Design content and presentation of the course according to the role and functions of the hospital library in hospitals of varying sizes.

METHOD (1) Analyze data from previous courses;

(2) Examine handbooks, audio-visual packages and other aids;

(3) Consult with education specialists.

A collection requires the services of trained staff; likewise trained staff require an adequate collection. The range of services that the collection and staff can offer must also be made known to users and potential users. Two logical consequences can be deduced from this.

First, it follows that the establishment of a core collection should occur at the same time as the provision of training courses. For example, if in a New South Wales Region a base hospital is selected as a suitable environment to house a core collection, then it is at that hospital that a training course should also be conducted: for the library staff at the base hospital and for library staff from adjacent hospitals. Experiences acquired in the working environment are more likely to be applied in the working environment than experiences acquired elsewhere and requiring transfer.

Second, it also follows that the establishment of a core collection and of a training course for hospital librarians should occur at the same time as the provision of a course of user education. Again, a course that occurs in the working, that is, hospital environment. Such a course should be designed within the same framework as a training course for library staff.

Pilot Study no.4. Design of Course for hospital library clientele

PHASE I

Define the information needs of the hospital personnel.

METHOD (1) Analyze data from the recommended information flow study;

(2) Analyze data from the recommended core collection study.

PHASE II

Design the content and presentation of the course according to defined information needs.

METHOD (1) Analyze data from previous courses;

(2) Examine handbooks, audio-visual packages, and other aids;

(3) Consult with education specialists.

Depending on the effectiveness of Pilot Studies Nos. 3 and 4, consideration should be given to the development of Travelling Workshops or Teaching Laboratories similar to those for users of information in universities and polytechnics currently under consideration as pilot studies by the Research and Development Department of the British Library (9). The place of such workshops within the overall organization of medical information services will be discussed later.

The necessity of training hospital library staff in the appropriate lines of communication to further sources of information has been stressed. The inter-library loan network as one of the main lines of communication among libraries is the subject of the following section.

(iii) Inter-Library Loan Network Development

The objective of the inter-library loan network as evidenced in the AACOBS Inter-library Loan Code, May 1966, is to provide rapid delivery of infrequently demanded documents to users. Previous study by the investigators (43) indicates that the delivery of journal literature to users via the network is inadequate, even as it functions in the larger universities.

Data obtained in New South Wales and Queensland indicate that at present the inter-library loan network operates haphazardly. The quality and quantity of service provided, methods of charging (if any) and so on are unco-ordinated among libraries. The source to which a

request is directed appears to be a matter of personal decision on the part of individuals rather than a result of policy decisions. (39) Some libraries appear to be providing far more service than they receive and vice-versa. The criteria upon which decisions are made to use the network to obtain an item appear also to be personal decisions.

The haphazard functioning of the network, as outlined above, is not achieving the objective. The present system needs to be studied in order to ascertain whether an alteration of any of its features, either singly or in combination, might improve attainment of objective.

Alternative Approaches to Inter-library Loan Provision

There appear to be two approaches to the provision of an inter-library loan service for the supply of journal literature. The supply of monographs, audio visual and other material has certain unique problems and will not be discussed separately here. However, in general the suggested strategies to speed-up the delivery of journal literature also apply to the delivery of such items.

One approach to improvement involves the concept of a central photocopying service to which all requests are directed. Another approach involves the concept of a decentralized network in which requests are directed to local sources first.

A centralized photocopying service that has the single function of fulfilling inter-library loan journal photocopy requests has a number of advantages:

(1) there is no conflict between service to its own constituency and the inter-library loan service;

(2) the material is always available;

(3) the procedure is simple for the requesting library as there is no need to search for location;

(4) a site can be sought where physical maintenance and construction costs approach optimum.

However, such a service cannot provide any lending services or reading room services. It cannot by definition, be an organization providing a library service: it has to be a warehouse or storehouse of material.

The change in policy of the National Library of Medicine is relevant to this point. Originally it guaranteed to supply a photocopy of any document in the MEDLARS data base. That is, it guaranteed a centralized journal photocopying service in medicine. However, the fact that inter-library loan was one of the first services to be decentralized under the Regional Medical Library Program indicates how soon they felt the strain of trying to provide this service. Certain libraries in each Region were designated the Interlibrary Loan Service library and were funded specifically to provide service. In 1970, for example, 42% of the service grants to the Regional Medical Libraries were expended on the Interlibrary Loan Service. (24:384)

In the following passage the investigators explore the ramifications of the regionally-based United States medical inter-library loan network in some detail. Such an exploration seems the best way to indicate at once both the complexity of any regional system in comparison with a centralized system and the benefits which are likely to accrue in terms of developments in the regions in response to regional networking demands.

The United States Regional Medical Interlibrary Loan Network

In the United States the Regional Medical Libraries have been obliged by the National Library of Medicine to formulate lists of common titles which will not be eligible for inter-library loans funded by the Regional Medical Library Program. These lists consist of frequently used titles which presumably the National Library of Medicine feels and the Regions agree should be held in local areas. For example, the New York and Northern New Jersey Region's list for January 1974 contained 40 journal titles of which only issues prior to 1970 can be borrowed. These include the following: British Medical Journal, Journal of the American Medical Association, Lancet, New England Journal of Medicine, and Science. (*63:3*, May, 1973:*3*) As from January 1975 the list was expanded by a further 25 titles, including Archives of Neurology, Journal of Medical Education and Postgraduate Medicine. The purpose of the restricted titles list the Region's Newsletter announced as "NOT a command to purchase, rather it is a means to encourage cooperative acquisitions and reciprocal loans". (*63:5*, May, 1973:*2*)

The aim appears to be to spread the burden of providing service and also to direct requests to the closest, and hence theoretically at least, the quickest point of access. The inter-library loan manual of the same Region (*16*) directs libraries to submit requests to "near-by smaller libraries whenever possible. ... Larger libraries and systems should only be used for those requests which cannot easily be filled from local sources." (*16:11*) If the material is not held locally the request has to be sent through the network. Within the New York and Northern New Jersey Region four libraries have been designated Primary Libraries and are responsible for filling and forwarding inter-library loan requests for libraries within a defined geographical area. In addition the Regional Medical Library also acts as Primary Library for its own geographical area as well as serving as the secondary source for the entire Region. The Inter-library Loan Manual of the Region directs that:

> "Journal requests should be submitted to the Primary Library in your area. If your journal listings indicate that your Primary Library does not have the journal needed, but the Regional Medical Library (New York Academy of Medicine) does, send your request to the Regional Medical Library and state on the request form that your Primary Library does not report that title (or volume).
>
> If the journal title needed is neither in your Primary Library nor the Regional Medical Library, submit your request to your Primary Library for referral to the National Library of Medicine (or to such other libraries as may be specially contracted by the Regional Medical Library to provide interlibrary loan services to this Region).

Libraries, unless so designated, cannot submit requests directly to the National Library of Medicine. These requests must be submitted through their Primary Library." (16:12)

Each of the four Primary Libraries will only accept inter-library loan requests from individual libraries within their own area. Outside of their area they will only accept requests via other Primary Libraries.

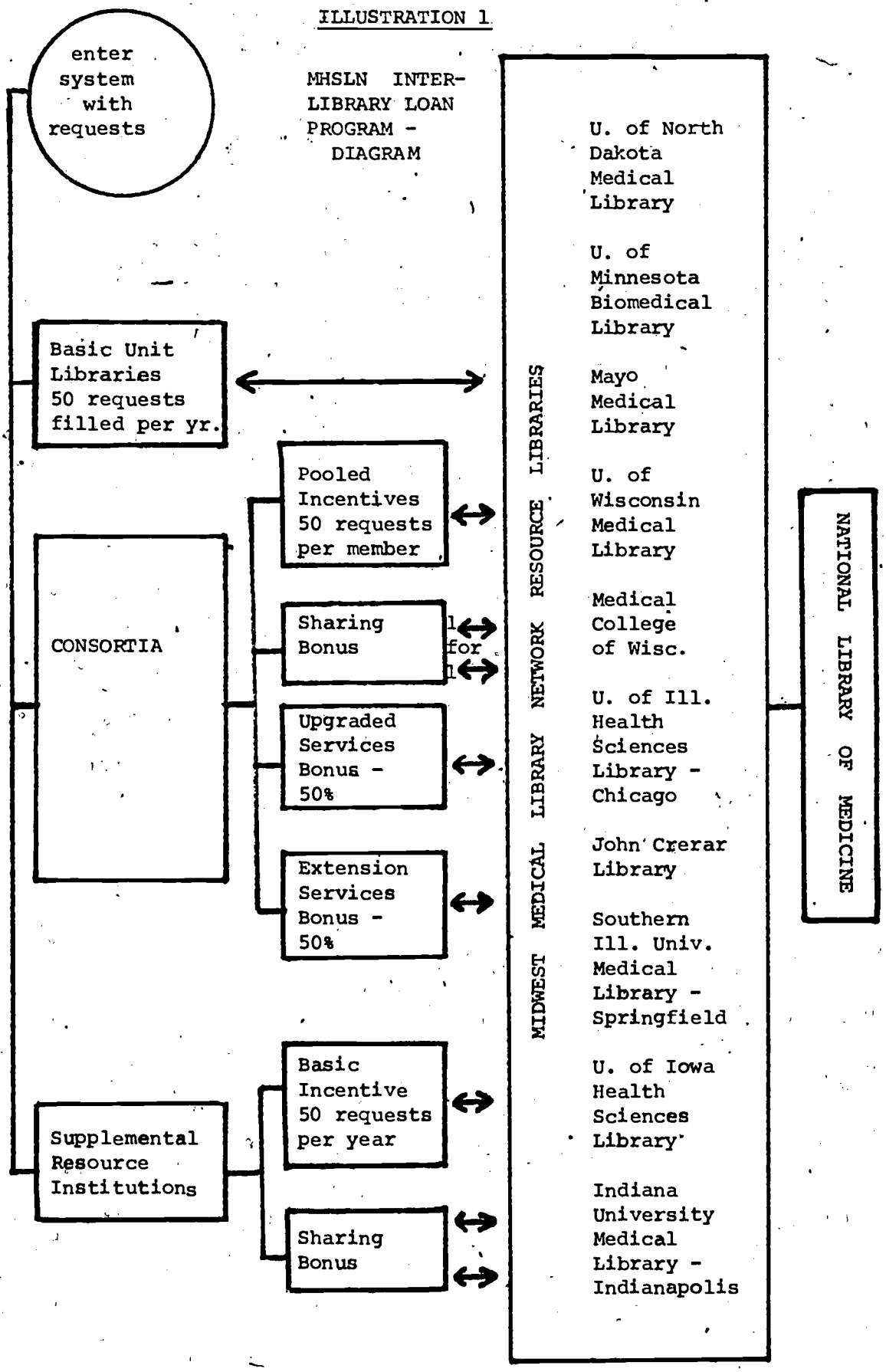
The Midwest Health Science Library Network also actively encourages the development of local inter-library loan networks. They use the term Resource or Designated Library, rather than Primary Library, but the concept is the same. The network is presented in the diagram taken from their Interlibrary Loan Program User Manual (69), on page 37.

The Midwest Health Science Library Management Office is "under contract with the National Library of Medicine to coordinate the inter-library loan activities among the Resource Libraries ... Certain common policies and procedures are followed among these libraries for inter-library loan so that all users throughout the Region may expect a consistent level of service". (69:v) The Resource Libraries report monthly to the Management Office on the volume of requests rejected, filled and referred elsewhere. For each request that is filled according to the guidelines of the Midwest Health Science Library Network Interlibrary Loan Program they are reimbursed at the rate of $US2.75.

The Basic Unit Libraries, hospital and clinic libraries, for the fiscal year May, 1974 - April, 1975 are entitled to 50 free inter-library loans from the Resource Library serving their geographical area. These loans can even be from titles on the restricted list as the growth of hospital collectionsand the co-ordination of resources "is recognized to be an evolutionary process that demands a certain amount of support by stronger institutions". (69:1) The objective of the Interlibrary Loan Program, however, is to "progress away from sole dependence on the Resource Library" (69:2) and thus in the future "The incentive offered to individual institutions will be phased to a lower level and greater incentives will be offered to cooperative arrangements". (69:2)

The development of consortia is one of the co-operative ventures that are supported by bonus inter-library loans. The Midwest Region defines a consortium as "a group of libraries that agree to extend among themselves library services such as interlibrary loan and reference" (69:3); the formation of consortia from various types of libraries, for example, public, hospital, college is encouraged. Each member receives 50 free inter-library loans, in addition, for every loan that each member makes, even if it is to another member, they receive an additional free inter-library loan: this is what they call "the sharing bonus". Again, initially requests can be made for items on the restricted list, but each consortium will be supplied with a basic list of frequently used journal titles "as a guide to which serials they should be sure to hold among themselves". (69:ix) Extra inter-library loan bonuses are also given for upgrading or extending services, eg. compiling a union list of serials.

ILLUSTRATION 1



Supplemental Resource Institutions include non-hospital, and non-medical school, health related libraries, eg. government agencies, commercial organizations. They also are offered a basic incentive of 50 free inter-library loans a year and are encouraged to become members of consortia and claim the sharing bonus.

Each Resource Library accepts requests from its own geographical area, from other Resource Libraries for material not held by the requestor and from Resource or Designated Libraries in other Regions for material held neither by that Region nor the National Library of Medicine. Each Resource Library will refer requests for material that they do not hold or that is unavailable, for example, at binding or in circulation. If such an item is held in the Midwest Region the request is sent to another Resource Library. If the item is not held in the Midwest Region the request is sent to the National Library of Medicine. Requests are only sent to a Resource or Designated Library in another Region if the item is not available at the National Library of Medicine and it can be verified that it is held in that Region.

Decentralized networks such as the ones described do not offer the advantages of a centralized service. For example, the Midwest Health Science Library Network will not fill requests if the item is "a current in-print textbook ... [or] the item is on restricted circulation" (*69:18*), since the Resource Libraries have responsibilities to their own constituencies. In the New York and Northern New Jersey Region material from the restricted list is not available. Requesting libraries still have the responsibility of searching for appropriate locations.

Such networks concentrate on developing local collections in order to reduce the volume of inter-library loan traffic and to the investigators this would seem a reasonable approach in the Australian situation. The volume of traffic is certainly small by Australian standards. For example, the New York and Northern New Jersey Regional Interlibrary Loan Quota System allows 400 inter-library loans per annum to teaching and research hospitals with interns and residents; non-teaching hospitals, colleges and universities are allowed up to 225 per annum; and health societies, non-health related research institutions and individuals with no library affiliations are allowed up to 100 per annum. Once these quotas have been met the Network forwards requests to the National Library of Medicine. (*16:13*)

To an Australian university library 225 free inter-library loans per annum would not significantly affect the economics of supplying inter-library loan service to its users. For example, the University of Queensland Library in the three month period from 15 March to 15 June 1971 requested 121 inter-library loans from health-related libraries in the Brisbane area. This comparatively large volume of inter-library loan traffic suggests that the adequacy of Australian collections may well be in need of examination.

Factors to be considered in examining Inter-library Loan Systems

An examination of the adequacy of collections has to be more than a numerical compilation of collection size statistics and the number of inter-library loan transactions. It is necessary to examine which titles in a collection are being used and by whom. For example,

the New South Wales Health Commission's survey revealed some small hospitals with quite large collections and some large ones with comparatively small collections. Until the utilization of these collections has been analyzed it is not possible to decide, for example, whether the large hospital has an inadequate library, or, in fact, a well-chosen collection appropriate to the needs of its users.

Inter-library loan transactions must also be examined in order to identify which items are involved. To return to an instance already mentioned: is it valid for a library to request current, common material because its copy is on loan? Obviously, the U.S. Regional Medical Libraries have decided that for them the answer is "no".

There has been a series of studies of the inter-library loan system conducted by the Library and Biomedical Information Center of the School of Medicine at the Wayne State University. These studies have examined the characteristics of both the items requested and the organizations and individuals who request them. One early study (*87*) was simply to collect data on existing inter-library loan policies and it revealed a great variation in policies among libraries, on lending current journals, on charges, and so on.

Another early study (*85*) analyzed the requests made by the Children's Hospital, Michigan in order to determine the most frequently requested titles, the date of publication, the ratio of journals to monographs, which institutions supplied the items, and who requested the service. The findings have been corroborated by other studies. For example, nine most frequently requested titles were identified (and purchased), they included the American Journal of Obstetrics and Gynecology, Journal of Applied Physiology and Nature; 87% of the items requested from the journal literature had been published in the previous 15 years.

One very interesting study in the series (*83*) by Cruzat and Pings attempted to arrive at some standard unit of measurement of inter-library loan service using data obtained from a number of studies. They felt that the results were inconclusive, but their discussion of methodological and other problems in measuring utilization of inter-library loan systems is illuminating.

The investigators believe that studies along similar lines ought to be conducted in Australia in order to ascertain the type of material being requested by which institutions and for which users. Granted the cost of an inter-library loan transaction to the lending library the appropriateness of using the inter-library loan system in certain instances needs examination, although, of course, the "evolutionary process that demands a certain amount of support by stronger institutions" (*69:1*) must not be forgotten.

Should the Australian Medical Inter-library Loan Network be Centralized or De-centralized?

To the investigators a central photocopying service has the advantages of providing for requesters relatively simple access to journal articles. However, for the reasons previously mentioned on page 34 it cannot also offer library service. Consequently such a central service cannot utilize an existing library collection as its

data base. Thus, a separate collection would have to be created.

Overseas studies suggest that it is fairly recent, common titles that form a large part of inter-library loan requests. A study of Australian inter-library loan requests is necessary to ascertain whether that is also the case here. The investigators hypothesize that it will be thecase and that such titles are already available in several locations.

The optional strategies appear to be the following, either singly or in combination.

1 - Develop a central collection

The disadvantages are that a new collection has to be assembled, housed and serviced, added to which costs is the cost of each inter-library loan transaction. There is the greater time-lag that must occur if a request is sent to a central service as opposed to holding the title in one's own collection or locating it in a nearby library. Such a collection is also unavailable for browsing, about the function of which in the creative process little is known but general consensus is that it plays some part.

2 - Fund existing libraries with substantial collections to enable them to provide an inter-library loan service for individuals outside of their constituencies

The disadvantages are that space and staff are already scarce resources in libraries with sufficiently substantial holdings to be able to act as inter-library loan centres. Each time an item is removed for photocopying it becomes unavailable to the library's clientele. If multiple copies and additional staff are acquired through special funding they will be occupying expensive space that is already scarce for the functions that have to be carried out in a library environment, for example, reader education. Furthermore, this system guarantees free access to material to organizations who avoid the outlay involved in acquiring and servicing materials at the cost of the lending library.

3 - Develop decentralized collections of commonly requested items and thus reduce the demand for inter-library loans

The disadvantages are the cost of establishing such collections and the need for trained staff to service them.

Granted the problem in each approach outlined above the investigators recommend that a combination of the three approaches be attempted as Pilot Study no.5. The general concept is that of a Regional Inter-library Loan Centre. The general objective is to combine the best features of centralized and regional systems. At present there are many environments in Australia where there may well be insufficient need for such a centre to be established, for example, in some of the health service regions administered by the Health Commission of New South Wales. However, as a working criterion the investigators suggest that wherever there is at least one medical school there will be sufficient demand generated to require an Inter-library Loan Centre.

Pilot Study no.5. Experimental Regional Inter-library Loan Centre

PHASE I

(1) Establish an Inter-library Loan Centre in a geographical area that allows courier access to a medical school library. The Centre should:

i. collect, store and make accessible a collection of duplicates, back-runs and rarely used material that existing libraries are willing to dispose of; not a good start

ii. provide a photocopying service from this collection run by non-professional staff;

iii. set up a Central Statistical Office with professional staff to whom copies of all inter-library loan transactions by all health-related libraries in the area would be sent;

a) conduct bibliographical and user analysis of present patterns of inter-library loan utilization;

b) act as a referral centre when such requests are not by libraries with reciprocal arrangements.

PHASE II

(1) Only after the analysis undertaken in PHASE I has been completed will it be possible to undertake the following tasks:

i. determine whether there is or is not a most frequently requested core of items; Bradford 2nd. Of course there will be.

ii. devise guidelines for estimating when sufficient demand has been generated to merit acquisition by the borrowing library;

iii. determine whether there are identifiable characteristics of groups of medical information users and whether such characteristics could be used to predict future demand for particular materials;

iv. determine the network of resource and client libraries and encourage the channelling of inter-library loan requests from client libraries to the most appropriate resource libraries in order to share the burden of service;

v. determine the quota of free inter-library loans that resource libraries "owe" to their client libraries and reimburse them accordingly;

vi. design a standard bulk-billing or voucher system for charging for inter-library loans in excess of the quota or from non-client libraries who do not offer reciprocal agreements.

To the investigators an Inter-library Loan Centre has the immediate advantage that it provides for a central statistical and analytical function. It is unrealistic to expect already overworked staff to do the analysis of the present system that is necessary before successful changes can be implemented.

By virtue of its collection of duplicates, back-runs etc., it will be able to provide some inter-library loan service and thus reduce the volume of traffic to existing sources. By providing housing for the collection it will ease space problems in existing libraries.

By acting as a referral centre for requests to and from other areas among libraries that do not have reciprocal agreements, it will be able to monitor the supply and demand from and to particular institutions.

The investigators do not envisage such an Inter-library Loan Centre as the one central location within an area for all journal material. Even the most efficient photocopying service is no substitute for a library: all it can do is supply cited items. The facility to browse whether it be for research purposes or for current awareness is felt to be a major aspect of library service and for this it is necessary to have collections located close to users.

Nor do the investigators envisage that such a Centre would acquire very specialized or very rare material. Such is rather the function of the National Library of Australia's ANSTEL as well as that of ensuring that material of an historical or archival nature is preserved.

To act as an efficient referral agent for requests to and from other areas the Centre must have up-to-date complete listings of locations. Again, it is seen as one of the responsibilities of ANSTEL to ensure that these are available: either through the efforts of the National Library of Australia or of other bodies. At present there are organizations in the private sector who use the free inter-library loan service available from the medical school libraries and who do not contribute information on their own holdings to Scientific Serials in Australian Libraries. It will be one of the functions of the Centre to ensure that all organizations who utilize the inter-library loan network either reciprocate or pay a fee for service.

The above approach presents strategies to rationalize the direction of requests and to devise criteria for what constitutes "appropriate" use of the network. It also presents strategies to lessen the volume of inter-library loan traffic and to assess when user-demand merits local acquisition. By lessening the volume of traffic, rationalizing its flow and placing collections in areas of user-demand it is hoped to approach the objective of providing rapid delivery of infrequently demanded material via the inter-library loan network. The development of local collections and the training of library staff outlined in previous sections are also seen as helping toward meeting the set objective.

iv Co-ordination and Dissemination of Medical Information Facilities

Collection building, training library staff and educating users, and rationalizing the inter-library loan network all require co-operation from the various providers and users of medical information

facilities. By definition co-operation cannot be legislated for; but a body such as the National Library of Australia has both the legislative basis and leadership potential to faciliate and co-ordinate cooperative efforts.

At a State level there are the resources of the medical school libraries, the various Post-Graduate Committees in Medicine and similar bodies, the health-related libraries of Federal and State Governments, libraries and information services of health-related professional societies; health-related libraries in the private sector, and hospital library and information services. At present there is no central point of access from which one can learn of their existence.

There is a need for more co-ordination among the various services. The proposed Victorian Library Network (5) does not consider the resources of the Governmental health-related libraries. That proposal and the proposed Victorian Regional Drug Information Network (40) make no reference to each other. Some hospital based drug information services are in the process of developing a shared-indexing scheme for drug-related material in select journals. (See page 18) This is being done with energy and good will but without any systematic prior assessment of whether existing library-held bibliographical tools already provide such indexing.

Among States there is also a need for more communication. For example, in Queensland there is no Medical Librarians' Group, but there is some discussion on the feasibility of a regional network. There appears, however, to be little knowledge of the Victorian proposal and what is known has been gleaned informally. There are a variety of network designs, operational and proposed; for example, the Health Commission of New South Wales' health services Regions, the proposed Victorian medical library network, the Hospitals and Health Services Commission's proposed continuing education network. Communication among network developers is essential.

At a national level there is also a lack of communication. The investigators have encountered a number of medical librarians with very little knowledge of the services available through ANSTEL; in fact, they encountered several who were unaware of the existence of ANSTEL.

There is also a very pressing need for more communication between the providers of medical information services and the consumers of such services. For example, the investigators were sorry to note the absence of any library representation in the membership of the proposed Australian Committee on Continuing Medical Education (ACCME) outlined in the Hospitals and Health Services Commission's Report Continuing Medical Education. (3:24) The Report recommends that Area Co-ordinators of Continuing Medical Education be appointed. Their duties would include assessing the continuing educational needs of the area and organizing appropriate programs. As well as "maintaining close contact with institutions and practitioners in his area", it is recommended that:

> "There would be great advantages in him being associated with a clinical medical school to ensure good communications with those providing undergraduate and postgraduate programs, and to have access to the educational resources of the medical school." (3:22)

Elsewhere in the Report "medical literature" is included as one of the "educational resources". (3:19) Thus, presumably the writers of the Report envisage that Area Co-ordinators would have access to the medical school libraries. Whether the resources of these, and other medical libraries, are to be made available to the participants in continuing education programmes is not spelt out. In fact, nowhere in the Report is the provision of medical literature or the role of the medical library discussed, as distinct from the mention in the above quotation.

The lack of awareness among users and potential users of the range of services and appropriate access points has already been discussed in this and in a previous report.(43) It is hoped that implementation of Pilot Study no.4 could lead to Travelling Workshops which could ameliorate this condition at least for hospital-based users.

The investigators envisage that such Workshops could be one of the services that could be offered by a proposed Regional Information Unit (RIU) which is outlined in Pilot Study no.6 below. Again, as in Pilot Study no.5, it is not possible at present to define a "Region" geographically but as a working criterion it is proposed that wherever there is at least one medical school, a Regional Information Unit (RIU) could be set up as a Pilot Study.

Should such units prove viable, their staffing, funding and servicing should be a co-operative effort by all those organizations who provide medical information facilities or whose members utilize medical information facilities. It is recommended however that the National Library be prepared to undertake most of the financial burden of the following Pilot Study.

Pilot Study no.6. Experimental Regional Information Unit

OBJECTIVES

(1) ensure a central point of access on information about information services for both users and providers; that is, to perform a co-ordinating function;

(2) ensure that users and providers of information services are aware ofavailable services; that is, to perform a disseminating function.

To achieve these objectives the following strategies are proposed:

PHASE I

(1) Set up a Co-ordinating Unit within the RIU to:-

i. collect information on functioning and emerging services by searching the literature, by personal enquiry, inviting correspondence etc.;

ii. continuously up-date such information and provide a question-answering and referral service:

a) between providers of services;

b) between users and providers of services.

(2) Set up a Disseminating Unit within the RIU to:

i. disseminate information to users and providers of services:

a) by newsletters, personal communications etc.;

b) by holding seminars, workshops etc., at the RIU;

c) by actively seeking to participate in seminars, workshops etc., held by other organizations;

d) by organizing Travelling Workshops as outlined in Pilot Study no.4 to inform users and providers.

ii. educate users and train providers of services in the utilization of information services:

a) by newsletters, personal communication etc.;

b) by holding seminars, workshops etc., at the RIU;

c) by actively seeking to participate in seminars, workshops etc., held by other organizations;

d) by organizing Travelling Workshops as outlined in Pilot Study no.4 to educate users and train providers of medical information services.

In all its activities the experimental RIU should actively seek to create communication links both among providers of medical information services and between providers and users of such services.

The data input and output of the RIU is homogeneous in the sense that it is all information on information services. The investigators recommend however that a distinction be made between the collecting and co-ordinating of the data and its dissemination. One reason is the simple problem of manpower: someone conducting a Training Workshop obviously cannot be manning a telephone in a referral centre. The second reason is related to the personal characteristics, skills and knowledge bases that would probably be desirable in the staff of an RIU.

It is partly for this reason of staff skills and abilities that the investigators also recommend drawing a distinction between information on information services and providing education and training in their utilization. The necessity for distinguishing the two functions has been demonstrated to the investigators in otherwise well-organized seminars and workshops.

To be utilized successfully many information services require a knowledge of the idiosyncrasies and details of the system that can be both meaningless and confusing to the individual who is only vaguely familiar with the system and is not intending to use it immediately:

such an individual requires no more than general information to acquaint him of the existence of such a system which could be of use to him. When he has an information need that the system can satisfy, then he will be sufficiently motivated to undergo a learning process. As an example, the Area Co-ordinator recommended by the Hospitals and Health Services Commission might find it useful to have an idea of the number and types of services that exist and to know that there is a referral centre to which he can either refer individuals or refer himself for more detailed information. Once a specific need has been identified, then education in the utilization of a particular system would be appropriate. In other words, his first need would be satisfied through the co-ordinating function of the RIU: his second, by the disseminating function.

PHASE II

Only after PHASE I has been conducted will it be possible to evaluate the need for and effectiveness of an RIU. Subsequent to this evaluation, and any amendments required, it should be possible to proceed to PHASE II - the development of a network of Regional Information Units.

How such a network would be related by location and administrative structures to the Regional Inter-library Loan Centres suggested in Pilot Study no.5 would be dependent on analysis of the results of all the studies recommended in this report. At present there is insufficient data on the quantity, quality and dispersion of medical information needs to be able to design an effective network of regional medical information services.

The inter-relationships which ought to prevail between a regional medical library and information service and other regional networks have also been insufficiently researched. For example, if the medical library resources of the medical schools are to be accessible to participants in continuing education programmes for practitioners, should the resources of the Post-Graduate Committees in Medicine also be accessible to non-members? On a broader scale, what should the relationship be between regional medical information services and social welfare agencies?

While any more detailed examination of the co-ordination of regional information networks into a national information network is beyond the scope of this report, such examination is the logical sequence to a discussion of regional networks. For example, should inter-library loan requests from one Region to another be restricted to items not held by a national centre? Is there a need for a national centre? If there is, what are the respective roles of bodies such as the National Library of Australia, the Australian Department of Health, C.S.I.R.O., the Australian Medical Association, the medical schools, and so on? When on-line access to the National Library of Australia's data bases, such as MEDLARS, becomes available where should the first nodes in the network be created? at the medical school libraries because of the proximity of researchers? or, in hospitals since it is the clinician rather than the researcher who demands speed and selectivity in retrieval?

These are just some of the questions that would have to be considered in the planning of a national medical information network. The investigators believe that the Pilot Studies outlined in this report would at least indicate some of the inter-relationships and information flows that would have to be considered, as well as perhaps suggesting possible solutions.

It is recommended that:

The National Library of Australia should, on the basis of this report and of any of the ALBIS submissions which may be relevant, prepare a series of documents which would constitute requests for research proposals in areas associated with the development of an effective medical information network.

Summary

In this section of the report the investigators have attempted to suggest optional strategies that might be effective in ameliorating the problems seen in the present situation as outlined in Section II. The model of problem-solving and decision-making by objectives presented in Section I is the framework within which suggested strategies are proposed: with continual emphasis on evaluation, review and control until desired objectives have been attained.

Six Pilot Studies have been proposed:

1 - Information flow in hospitals;

2 - Core collections for Australian hospital libraries;

3 - Design of course for untrained hospital library staff;

4 - Design of course for hospital library clientele;

5 - Experimental Regional Inter-library Loan Centre;

6 - Experimental Regional Information Unit.

It has also been suggested that the National Library should delineate the areas in which research is needed and frame a series of requests for proposals on which such research may be commissioned.

The optional strategies are presented as pilot studies, not as recommendations on how a regional medical information network should be developed. While the investigators suggest that the proposed strategies may well form the basis of a feasible and effective network, they would stress the importance of a flexible approach in network development. It is urged that such development commence by modifying and adapting the present situation on a basis that allows for alteration of direction and emphasis: to accommodate local variations and also to accommodate those changes that will be necessary as a result of the natural reaction to change that will arise from the development of medical information facilities.

IV CONCLUSIONS AND RECOMMENDATIONS

(i) Conclusions

The data collected in New South Wales, Queensland and Victoria indicate that -

hospital libraries have (i) inadequate collections;

(ii) insufficient trained staff;

(iii) haphazard lines of communication with each other as evidenced by their utilization of the inter-library loan network:

and, that medical information facilities in general consist of -

(iv) a multiplicity of sources with few formal lines of communication existing among them;

(v) a paucity of mechanisms to ensure awareness amongst users and potential users of their information needs and of the services available to satisfy those needs.

(ii) Recommendations

The investigators recommend immediate implementation of -

(i) Pilot Study no.1 - Information flow in hospitals as outlined in Section III i;

(ii) Pilot Study no.2 - Core collections for Australian hospital libraries as outlined in Section III i;

(iii) Pilot Study no.3 - Design of course for untrained hospital library staff as outlined in Section III ii;

(iv) Pilot Study no.4 - Design of course for hospital library clientele as outlined in Section III ii;

(v) Pilot Study no.5 - Experimental Regional Inter-library Loan Centre as outlined in Section III iii;

(vi) Pilot Study no.6 - Experimental Regional Information Unit as outlined in Section III iv.

It is also recommended that -

(vii) the National Library of Australia commission additional research into the inter-relationships and information flows to be considered in the planning of a national medical information network.

B I B L I O G R A P H Y

1. ALGERMISSEN, V. "Biomedical librarians in patient care setting at the University of Missouri - Kansas City School of Medicine. Bulletin of the Medical Library Association 62(4), October, 1974 : 354-358.

2. ANGRIST, A.A. "A plea for selective library service". New York State Journal of Medicine 74(11), October, 1974 : 2055-2058.

3. AUSTRALIA. Hospitals and Health Services Commission. Continuing Medical Education Canberra, 1974.

4. AUSTRALIAN and New Zealand Hospitals and Health Services Yearbook, 1973. Kensington, New South Wales University Press and School of Health Administration, University of New South Wales, 1973.

5. BAILLIE, J. A proposal for the regional organization of country hospital libraries in Victoria, 3p. Unpublished, November, 1974.

6. BEACOCK, E.S. "Library Networks in the '70's : Public Libraries". Canadian Library Journal, 31 (3), June, 1974 : 192-193.

7. BECKMAN, M. "Library Networks in the '70's : University Libraries". Canadian Library Journal 31 (3), June, 1974 : 197-200.

8. BELL, J.A. "The Academic Health Sciences Library and Serial Selection". Bulletin of the Medical Library Association 62 (3), July, 1974 : 281-290.

9. BL ; the British Library Research and Development Newsletter, 1 September, 1974 : 6-7.

10. BLOOMQUIST, H. et al Library practice in hospitals : a basic guide. Cleveland, The Press of Case Western Reserve University, 1972.

11. BORDA, E. and MURRAY, M.E. "Introduction to library services for allied health personnel". Bulletin of the Medical Library Association 62(4), October, 1974 : 363-366.

12. BRANDON, A.N. "Selected list of books and journals for the small medical library". Bulletin of the Medical Library Association 59(2), April, 1971 : 266-285.

13. BRANDON, A.N. "Selected list of books and journals for the small medical library". Bulletin of the Medical Library Association 61 (2), April 1973 : 179-200.

14. BRIDEGAM, W.E. and MEYERHOFF, E. "Library participation in a biomedical communication and information network. Bulletin of the Medical Library Association. 58(2), April, 1970 : 103-111.

15. BRUCE, E.W. "The hospital library : access to information for rural health professionals". Bulletin of the Medical Library Association 62(4), October, 1974 : 359-362.

16. BRUETTE, V.R. and CLYDE, D.C. Interlibrary Loan Manual for medical libraries in New York State and Northern New Jersey. [New York] New York and Northern New Jersey Regional Medical Library, 1973.

17. CANADIAN Library Association. Information Services Section. Interlibrary loan procedures manual. Ottawa, 1971.

18. COLAIANNI, L.A. and MIRSKY, P.S. Manual for librarians in small hospitals. Los Angeles, University of California, Biomedical Library, 1974.

19. CRAMER, A. "First Aid" for hospital librarians. Salt Lake City, Utah, Network for Continuing Education Intermountain Regional Medical Program, April, 1971. (Hospital Library Handbooks, No. 4)

20. CRAMER, A. Hospital Library Administration. Salt Lake City, Utah, Network for Continuing Education Intermountain Regional Medical Program, April, 1971. (Hospital Library Handbooks, No. 1)

21. CRAMER, A. Hospital Library Development. Salt Lake City, Utah, Network for Continuing Education Intermountain Regional Medical Program, January, 1972. (Hospital Library Handbooks, No. 2)

22. CRAMER, A. Printed Materials : Selection and Acquisition. Salt Lake City, Utah, Network for Continuing Education Intermountain Regional Medical Program, August, 1972 (Hopsital Library Handbooks, No. 3)

23. CRAWFORD, D.S. "Periodical usage" Bulletin of the Medical Library Association. 59(3), July, 1971 : 516-517

24. CUMMINGS, M.M. and CORNING, M.E. "The Medical Library Assistance Act : an analysis of the N.L.M. Extramural Programs, 1965 -70." Bulletin of the Medical Library Association 59(3), July, 1971 : 375-391

25. DEANE, A.S. "Systems for collaborative delivery of health care. A case study - consortium achieves mutual goals". Hospitals 48, 1 June, 1974 : 95-96.

26. DUNCAN, H.F. "Selected reference aids for small medical libraries". Bulletin of the Medical Library Association 58(2), April, 1970 : 134-158.

27. DUVA, A. "A regional community medical library network". Florida Family Physician 23(1), Winter, 1973 : 9-12.

28. FINK, W.R., BLOOMQUIST, H. and ALLEN, R.G. "The place of the hospital library consortium in the national Biomedical Communications Network". Bulletin of the Medical Library Association 62(3), July, 1974 : 258-265.

29. GARFIELD, E. "Citation analysis as a tool in journal evaluation". Science 178, November 3, 1972 : 471-479.

30. GIESLER, R.H. and YAST, H.T. "A survey of current hospital library resources". Hospitals 38, 16 June, 1964 : 55-57.

31. GOLD, R.A. et al "The Health Information Specialist : a new resource for hospital library services and education programs". Bulletin of the Medical Library Association 62(3), July, 1974 : 266-272.

32. HICKEY, R.C. et al "Telephone consultation - dial access: a project in cancer education and control". Southern Medical Journal 66(10), October, 1973 : 1159-1162.

33. HODGES, T.M. "NERMLS : the first year". Bulletin of the Medical Library Association 57(4), October, 1969 : 329-337.

34. HODGES, T.M. NERMLS and the community hospital : Service education, and advice. Bulletin of the Medical Library Association 58(3), July, 1970 : 320-324.

35. HUNTLEY, J.L. "The core health science library in Canada". Bulletin of the Medical Library Association 62(2), April, 1974 : 124-128.

36. HUNTLEY, J.L. and ORROK, P.A. "The hospital library profile as an evaluation mechanism". Bulletin of the Medical Library Association 58(3), July, 1970 : 403-414.

37. JOINT Commission on Accreditation of Hospitals. Accreditation Manual for Hospitals Chicago [1971].

38. KENNEDY, H.E. and FISHER, D.A. "Information support for the biomedical sciences". Federation Proceedings 33(6), June, 1974 : 1714-1717

39. KENNY, J. Factors in interlibrary loans work which influence the direction of loan requests. Sydney 1973. Project report submitted in partial fulfilment of the requirements for the degree of Master of Librarianship, University of New South Wales, 1973.

40. LEW-SANG, E. "Drug Information services in Victoria." Australian Journal of Hospital Pharmacy 4(2), 1974 : 61-68.

41. LIBRARY Association. Hospital libraries : recommended standards for libraries in hospitals. London, 1965.

42. MACLEAN, H.J. "Special Libraries and the development of a Canadian Library System and Network Policy". Canadian Library Journal 31(3), June, 1974 : 204-205.

43. MAGUIRE, C. and LOVELACE, E. The information needs, usage and attitudes of medical researchers in Australia : a preliminary investigation. Kensington, School of Librarianship, University of New South Wales, 1974. (To be published on microfiche by the National Library of Australia).

44. MAZZARINO, C. "Library Service". Hospitals 43, 1 April, 1969 : 129-132.

45. MEDICAL Librarians' Group (Victorian Branch). Basic list of books for small hospital libraries. 8p Unpublished, [1974].

46. MEDICAL Librarians' Group (Victorian Branch). List of basic journals for hospital libraries. 4p. Unpublished, January, 1974.

47. MEDICAL Librarians' Group (Victorian Branch). Notes on plan of instruction for untrained persons in charge of hospital libraries. 3p. Unpublished, [1974].

48. MERML NEWS': Newsletter of the Mid-Eastern Regional Medical Library, Philadelphia, Pennsylvania. Monthly.

49. MIDWEST Health Science Library Network. A working paper on co-operative efforts in the midwest medical library network. [Chicago], Midwest Medical Library Network, 1974.

50. MIDWEST Health Science Library Network. MHSLN Audio-Visual Program - Working Paper I. [Chicago], Midwest Health Science Library Network Management Office, 1974.

51. MIDWEST Health Science Library Network. Wisconsin Interlibrary Loan System/Midwest Health Science Library Network. [Chicago], Midwest Health Science Library Network Management Office, 1974.

52. MILLER, J.D. "Health Sciences Libraries in Hospitals". Bulletin of the Medical Library Association, 60(2), April Supplement, 1972 : 19-28.

53. MOLL, W. "Basic journal list for small hospital libraries". Bulletin of the Medical Library Association 57(3), July, 1969 : 267-271.

54. MONASH University. Biomedical Library. Particulars of service available through Monash University Biomedical Library. 1p. Unpublished, [1974].

55. NATIONAL Commission on Libraries and Information Science. A national programme for library and information services. 2nd Draft. Revised. Washington, D.C., National Commission on Libraries and Information Science, 1974.

56. NATIONAL Library of Medicine News : Newsletter of the National Library of Medicine. Bethesda, Maryland. Monthly.

57. NERMLS NEWS : Quarterly Newsletter of the New England Regional Medical Library Service. Boston, Massachusetts.

58. NEW England Regional Medical Library Service. Twelfth (12) Library Training Institute, March 18-22, 1974. Boston, Massachusetts, [1974].

59. OCTASPHERE : Newsletter of the Midcontinental Regional Medical Library Network. Omaha, Nebraska. Irregular.

60. OLSON, P.E. and PLETZKE, C.J. Analysis of the Midwest Medical Union Catalogue. Chicago, Midwest Health Science Library Network, 1974.

61. ORR, R. "Development of methodologic tools for planning and managing library services. iv. Bibliography of studies selected for method and data useful to biomedical libraries". Bulletin of the Medical Library Association 58(3), July, 1970 : 350-377.

62. PROGRAM Notes : Newsletter of the Southeast Regional Medical Library Program. Atlanta, Georgia, Irregular.

63. REGIONAL Medical Library News : Newsletter for the New York and Northern New Jersey Regional Medical Library. New York, N.Y. Irregular.

64. RESOURCES : Newsletter of the Midwest Medical Library Network. Chicago, Illinois. Quarterly.

65. RML IV : Newsletter of the Mid-Atlantic Regional Medical Library Program. Bethesda, Maryland. Irregular.

66. SCHROEDER, R.D. "Training for information retrieval". Hospitals 45, 16 July, 1971 : 108-112.

67. SHERRINGTON, A.M. "An annotated bibliography of studies on the flow of medical information to practitioners". Methods of Information in Medicine. 4(1), 1965 : 45-57.

68. SHERWOOD, K. "Relative value of medical magazines". Northwest Medicine. 31, June, 1932 : 273-276.

69. SODERGREN, L. ed Interlibrary Loan Program Midwest Health Science Library Network. Chicago, Midwest Health Science Library Network Management Office, 1974.

70. "SPECIAL Library Standards". Australian Special Library News. 2(4), July, 1969 : 72-78.

71. STANGL, P. and KILGOUR, F.G. "Analysis of recorded biomedical book and journal use in the Yale Medical Library. Part I : Date and Subject Relations". Bulletin of the Medical Library Association 55(3), July, 1967 : 290-315.

72. STANGL, P. and KILGOUR, F.G. "Analysis of recorded biomedical book and journal use in the Yale Medical Library. Part II. Subject and user relations." Bulletin of the Medical Library Association. 55(3), July, 1967 : 301-315.

73. STEARNS, N.S., BLOOMQUIST, H. and RATCLIFF, W.W. "The hospital library - part I and II". Hospitals 44, 1 March, 1970 : 55-59, 16 March, 1970 : 88-90.

74. STEARNS, N.S. and RATCLIFF, W.W. "An integrated health-science core library for physicians, nurses and allied health practitioners in community hospitals". New England Journal of Medicine. 283(27), 31 December, 1970 : 1488-1498.

75. SWINSCOW, T.D.V. "Library lists : core or apple?" Bulletin of the Medical Library Association. 62(2), April, 1974 : 129-131.

76. TIMOUR, J.A. "Selected lists of journals for the small medical library : a comparative analysis". Bulletin of the Medical Library Association. 59(1), January, 1971 : 87-93.

77. UNITED STATES. National Library of Medicine. Programs and Services : fiscal year 1974. Bethesda, Maryland, [1974].

78. UNITED STATES. National Library of Medicine. Lister Hill National Center for Biomedical Communications. Report to the Congress 1974. Bethesda, Maryland, 1974.

79. WASHINGTON Hospital Center. The LATCH manual for hospital librarians. Washington, D.C., [1974].

80. WAYNE STATE UNIVERSITY. School of Medicine. Library and Biomedical Information Service Center. An analysis of Wayne State University Medical Library unfilled interlibrary loan requests January 1967, by J.A. Andrews. Detroit, April, 1967. (Report no.32).

81. WAYNE STATE UNIVERSITY. School of Medicine. Library and Biomedical Information Service Center. An evaluation of nine hospital health science libraries' text and monograph collections, by V.M. Pings. Detroit, February, 1967. (Report no.28).

82. WAYNE STATE UNIVERSITY. School of Medicine. Library and Biomedical Information Service Center. An evaluation of the interlibrary loan service Wayne State University Medical Library 1963 - 1964, by G.S. Cruzat. Detroit, September, 1964. (Report no.5).

83. WAYNE STATE UNIVERSITY. School of Medicine. Library and Biomedical Information Service Center. Identification of Interlibrary loan users in the Biomedical Library Network Metropolitan Detroit, by G.S. Cruzat and V.M. Pings. Detroit, June, 1967. (Report no.37).

84. WAYNE STATE UNIVERSITY. School of Medicine. Library and Biomedical Information Service Center. The interlibrary loan borrowing transaction : cost in hospital environments. Detroit, October, 1967. (Report no.41).

85. WAYNE STATE UNIVERSITY. School of Medicine. Library and Biomedical Information Service Center. Interlibrary loan service at Children's Hospital of Michigan, by J.M.B. Smith. Detroit, October, 1965. (Report no.16).

86. WAYNE STATE UNIVERSITY. School of Medicine. Library and Biomedical Information Service Center. A report on the inter-library loan service at the Lafayette Clinic from February, 1963 to January, 1964, by D.M. Reid. Detroit, May, 1964. (Report no. 2).

87. WAYNE STATE UNIVERSITY. School of Medicine. Library and Biomedical Information Service Center. Study of interlibrary loan policies of midwest biomedical libraries, by V.M. Ping. Detroit, September, 1965. (Report no.15).

88. WAYNE STATE UNIVERSITY. School of Medicine. Library and Biomedical Information Service Center. A study of interlibrary loans at Sinai Hospital of Detroit July - December 1965, by C. Cziske and V.M. Pings. Detroit, August, 1966. (Report no.21).

89. WAYNE STATE UNIVERSITY. School of Medicine. Library and Biomedical Information Service Center. Study of the use of interlibrary loan service in clinical environments, by V.M. Pings. Detroit, December, 1968. (Report no.46).

90. WAYNE STATE UNIVERSITY. School of Medical Library and Biomedical Information Service Center. Test survey of hospital library service in the Detroit area, by V.M. Pings. Detroit, May, 1966, (Report no.19).